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PSYCHOLOGICAL FOUNDATIONS OF PERSONALITY

A Guide for Students and Teachers

BY
LOUIS P. THORPE, PH.D.
Assistant Professor of Education, University of Southern California,
and Consulting Psychologist, Los Angeles

FIRST EDITION

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Sincerely inscribed
to my father, Christian A. Thorpe, editor,
scholar, and lover of books, from whom I have received
lifelong encouragement in academic and
professional endeavors

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PREFACE

For a number of years the author has been much interested in the various aspects and conceptions of what is both technically and popularly called "personality." In pursuing this interest, he noted that objective data and scientifically determined appraisals touching on this theme were as scattered and scrappy as leaves in a wind. To secure a thorough and systematic knowledge of the personality picture, he has tried to gather the accessible tangled threads of research data and sound psychological constructs which, organismically viewed, constitute our modern version of the dynamic human personality.

To present the outcome of this ofttimes elusive study is the purpose of the present book. It represents an attempt to organize, to refine, and occasionally to reinterpret the many references to personality matters that appear in scientific journals, in scholarly researches, and in works on child psychology, adolescent psychology, genetic psychology, abnormal psychology, educational psychology, clinical psychology, mental hygiene, pupil guidance, etc.

Although this volume presents material obviously pertinent to mental-hygiene courses, as well as to classes in child psychology, educational psychology, and related fields where the genetic development of the human organism is under examination, it is primarily intended to provide a basic conception of the nature, organization, and development of the human personality as these are known to objective psychology today. There is much loose talk about personality, its trait components, and the extent to which these are grounded in the genetic constitution. It is the author's belief that the student of psychology and education should become thoroughly familiar with the available knowledge of the fundamental mechanisms of human nature before attempting on a professional level the difficult task of changing the behavior trends or traits of others. Thus, this volume is offered as a textbook in courses wherein the nature of that most basic of all psychological concepts—the human personality—is given primary consideration. It is also offered as a source of easily accessible information to that host of earnest educators and professional workers in other lines who, although not concerned about the detailed technicalities of personality psychology as such, are anxious to secure a background in this field that will enable them to assist young and old alike in understanding their own natures and consequently in making increasingly better personal and social adjustments.

The book rests upon the principles and facts of genetic psychology. It musters the testimony of numerous researches, clinical studies, and objectively determined principles, many of which are scattered far and wide in the literature, in an effort to give a broad perspective of the personality as an ever-evolving organismic unit. It is believed that the presentation of enough documented material to indicate the complexity of the personality concept, as well as problems relating to its understanding, will serve to give objective validity to the treatment. With this foundation as a point of departure, the interested student or worker may go on naturally to a consideration of such practical issues as self-improvement along personality lines, the intelligent rearing of children, the development of social skills, programs of mental hygiene, the prevention of personality maladjustments, and similar problems of human engineering.

Mention should be made of the fact that this is not intended to be the type of book in which illustrative clinical case studies dominate the treatment. The author's files are replete with studies of this kind, but it is his judgment that the psychological foundations of personality are not determined by an examination of a collection of atomistic case presentations, important as these are in other connections. It is believed, rather, that foundational principles grow out of systematic and extensive researches carried on by capable scientists who work with appreciable numbers of individuals over a period of time and under reasonably well-controlled conditions. The author has reference to such representative contributions as those by Hartshorne and May, Gesell, J. B. Watson, Coghill, Child, Lashley, and others. Basic premises derived from the work on animals and human beings carried on by these and other scientists make possible our understanding of the behavior mechanisms which are ultimately observed in case studies. Thus case studies would appear to be derivatives of foundational principles rather than precursors thereof.

The author proposes, then, to be concerned with a study of the irreducible processes and mechanisms of human nature and to weave the materials, problems, and divergent views in psychology which are so often subsumed under the academic demarcations of child psychology, adolescent psychology, educational psychology, mental hygiene, etc., around the natural core and object of interest of human psychology—the personality of man. In an effort to do this intelligently, he has tried to avoid discreteness by organizing the documented material around large interlocked aspects of personality and in terms of a few major chapters, each of which is intended to be a derivative of the whole organismic personality pattern. Conflicting views are given a hearing and none are intentionally discarded unless the objective evidence seems to warrant such a disposition. It is the author's plan to come to as mature conclusions as possible without undue dogma. In the end he hopes that the reader will be able to discern a consistent picture of the personality theme, which is made possible, not by the author's interpretations, but by the testimony of the objective evidence that it has been possible to marshal.

The author is deeply indebted to a host of workers in psychology and related fields. He has endeavored wherever possible to indicate this obligation by reference to published contributions. More than ordinarily helpful have been the publications of Hugh Hartshorne, Mark A. May, Percival M. Symonds, Donald G. Paterson, Arnold Gesell, Gladys Schwesinger, W. W. Charters, Paul A. Witty, Arthur R. Gilliland, and John J. B. Morgan. The last three men not only amplified the author's understanding of personality matters through their publications but, as former instructors, inspired him to make a lifelong study of their practical as well as academic implications.

Most of all, however, he is grateful to those who assisted in the reading and constructive criticism of parts or all of the manuscript. Dr. Leo Samuels of the physiological chemistry department of the University of Minnesota Medical School read and materially improved the chapter dealing with biological foundations. One of the author's colleagues at the University of Southern California, Dr. William H. Burton, read a large part of the manuscript and from his rich experience contributed greatly to its improvement. Dr. Paul A. Witty, professor of education and director of the psycho-educational clinic at Northwestern University, under whose guidance the author first entered upon the adventures of serious psychological study and clinical endeavor, read and offered helpful criticisms of sections of special interest to him. The assistance of these men, who have gained distinction in their respective fields, has been invaluable.

The author is also indebted to Miss Lois Thompson, his former secretary, who spent endless patient hours typing and otherwise preparing the chapters for presentation to the publishers.

It should be clearly understood, however, that the author alone is responsible for the points of view and the interpretations that appear in the final product. Various of his colleagues differ with him somewhat on some of the positions taken, but to him these positions seem congruous in the light of such tangible data as are extant. If these turn out to be untenable or too dogmatically maintained, the author hopes to be one of the first to acknowledge the fact.

Louis P. Thorpe.

Los Angeles, Calif.,
August, 1938.

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EDITOR'S INTRODUCTION

Between the modern school and its traditional predecessor, no clearer distinction can be made than that which is implied in the dominant purposes of the two institutions. The goals of the old school rested upon a foundation of subject matter and time-hallowed techniques for presenting that subject matter; they were information-acquiring goals. The goals of the new school rest upon a foundation of desired changes in the lives of the learners themselves; they are personality-modifying goals. Where the teacher of other days often used subjects and procedures as ends in themselves, the modern teacher uses them merely as instruments in carrying forward the all-important task of changing human personalities.

To attack this task effectively, the modern teacher wants to know what personality is, how it changes, and how its proper development can be guarded and assisted in home, in school, and in community. In as precise and thorough a way as present scientific knowledge will permit, he wants to know the foundations of personality, the extent and nature of its educability, the character and operation of the dynamic forces that give it direction and power, the causes and mechanisms of its disturbances, the conditions of its adjustment and integration, and the methods of its appraisal and measurement. To know these things is a necessary part of the professional equipment of one who would be an engineer of changing human ways by education, a director of human learning toward great social ideals, rather than a mere lesson hearer, a pedagogical automaton presiding lifelessly over the cogwheels of a dead curriculum.

The present book is essentially a methodological treatise for teachers who have this aim. It cuts across the boundary lines of the usual courses in child psychology, psychology of adolescence, educational psychology, abnormal psychology, and mental hygiene in pursuit of its central theme, the dynamic human personality. It offers a wealth of research data, tested hypotheses, and vivid illustrations with which to construct a comprehensive and accurate picture of the personality in action. It is at once a textbook and a handbook for those who would learn the great craft of inspired and purposive teaching.

The author of this book is eminently qualified by training and experience for his task. As a college and university teacher, as a practicing psychologist in public and private clinics, and as a research worker in the personality field, he has built up a rich background of informed understanding and critical insight. Because he is a careful student, he is widely and thoroughly familiar with the researches and the theories of personality and its modification. Because he is a successful clinician, he knows the nature of personality processes and mechanisms as they actually occur. Because he is a skillful teacher he has woven these facts and concepts into a book for all those who teach personalities rather than subjects. In so doing, he has made a most worth-while contribution to the literature of that psychology which is related to the central and crucial task of education, the improvement of the human personality.

Harold Benjamin.

University of Colorado,
August, 1938.

PSYCHOLOGICAL FOUNDATIONS OF PERSONALITY

CHAPTER I

THE CONCEPT OF PERSONALITY

Man is most of all interested in himself, and of this engrossing topic he is particularly fascinated by what he commonly calls his "personality." His understanding of this subject, however, is by no means equal to his admiration for it. To remedy this lack, therefore, it becomes necessary to secure a broad overview of various meanings which have been assigned to the concept of personality before attempting to analyze it into its more discrete elements.

I. THE MEANING AND NATURE OF PERSONALITY

The term "personality" is probably one of the most ambiguous in modern psychology. Practically every writer has his own notion of what it means and what definitions should be attached to it. While we all recognize that each person possesses a unique individuality, which is peculiar to him alone, we do not know exactly how to describe this individuality and so we have fallen into the habit of giving it a general unanalysed label, *viz.*, personality. This is, of course, tantamount to using a convenient word to cover up our inability to offer an unambiguous description of the complicated human factors involved in any given case.

It may be that we are not justified in attempting to give a standard definition of such an involved concept as that of personality. Perhaps it would be better to describe the various components, reactions, and habit systems involved and to convey only a general idea of what is meant by personality in the broad organism-as-a-whole sense. As will be indicated more fully later, some psychologists still regard the personality as being an undefinable, unanalysable, and unknown factor in human life.

Originally, the word personality was derived from the Latin expression "persona" and had reference to speaking through a false face or mask. It was used in connection with theatrical performers who revealed themselves only through speech and actions. Current definitions range all the way from popular notions dealing with external characteristics and overt actions to metaphysical conceptions concerned with nonsubstantive entities.

Early Subjective Meanings of Personality.—In relatively prescientific times, when psychology was a branch of philosophy and before so-called "psychic" concepts were accorded objective study and treatment, personality was naturally regarded as something spiritual and metaphysical. It was thought of as some kind of unanalysable central force which gave direction to action and meaning to experience. This view is not acceptable to psychology today since it smacks strongly of subjective philosophy and assumes that the door is closed to an objective determination of just what the integrating factor or factors in human life really are.

Brooks[1] describes (but does not approve) another idea of personality that is obviously based on an early conception of the function of the "mind stream." According to this view, personality is synonymous with the "stream of ideas, feelings, and emotions" which are said to flow through consciousness. This view fails, of course, to give the key to the integration and "organization of experience about a central system (or systems) of purposes whose existence and fundamental importance are attested to by observation and reflection."

Another subjective view of personality holds that the integrating and synthesizing principle of life is the "self" or "ego." This entity is said to exist in time, but not in space, and to give meaning to experience in the time-sequence sense. Exponents of this view are likely to be philosophical rather than scientific in their essays on education and psychology. Tracy,[2] who is a typical example of this approach writes that the etherial entity called "self" is "the principle of unity, synthesis, and constructive interpretation, by which the phenomena become intelligible and the mental world presents itself as a cosmos instead of a chaos."

---

[1] F. D. Brooks, *The Psychology of Adolescence*, Houghton Mifflin Company, 1929, p. 349.

[2] F. Tracy, *The Psychology of Adolescence*, The Macmillan Company, 1920, p. 121. Quoted by permission of the publisher.

A somewhat more recent conception which demonstrates the "ego" idea with its various "faculties," but which is based on the now questionable "instinct" hypothesis was advanced by Prince.[3] Like William James he was anxious to lift psychology out of the morass of metaphysics, and so he assumed the existence of dynamic, driving forces in life called by the familiar name "instincts." He considered personality to be "a composite structure built by experience upon a foundation of preformed, inherited, psycho-physiological dynamic mechanisms (instincts, etc.) containing within themselves their own driving forces." He realized, of course, that these inherited tendencies were influenced and modified by experience and so regarded personality as including not only "biological innate dispositions," but "*acquired* dispositions and tendencies" as well. Prince's position that personality involves an aggregate of unanalyzed dynamic tendencies was considered sound some years ago, when instincts were having their day as the answer to our quest for a more tangible physiological explanation of behavior, but is now generally regarded, by many psychologists at least, as relatively outmoded.

It should be clear that the foregoing systems are no longer considered tenable in a growing psychological science which is seeking to transcend its earlier subjective conclusions and which is now fairly well committed to the objective, experimental approach to the solution of problems of personality as well as to other more tangible human inquiries.

Present-day Conceptions of Personality.—Current views regarding the concept of personality might be classified first of all as popular and unacademic on the one hand and psychological and perhaps more objective on the other. This distinction should be kept in mind since the personality idea is equally popular in both these areas and since it is frequently couched in somewhat similar terms in each. In one sense, it is unfortunate that psychology has elected to use words that are interchangeable with popular phraseology since such a practice obviously militates against a rigorous definition of technical terms. On the other hand, it may be that the exclusive use of a technical vocabulary would render psychology more unintelligible to the populace and even more detached from practical considerations then it is alleged to be at present.

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[3] M. Prince, *The Unconscious*, The Macmillan Company, 1921, pp. 530–532. Quoted by permission of the publisher.

The Popular Conception of Personality.—According to Schwesinger,[4] "The layman is usually concerned with the externality of the person; his dress, his voice, his gestures, his manners, his motor-coordinations, his charm, his versatility—any reactions, in fact, which are socially important." Morrison[5] makes much the same point in his discussion of personality development. This is evidently true since most people seem to have reference to the factors enumerated when referring to the acceptability or undesirability of an individual's personality.

Psychologists do not deny the importance of this social aspect of personality definition, but they generally advance a more precise and less superficial meaning for the term. For example, Roback[6] writes, "It is evident that in due course, the charm of these physical qualities wears off for the friend of long standing, and the deeper or inner personality begins to stand out. It is therefore this phase of personality which should claim our attention rather than its superficial aspects." In the same connection, Roback points out that we should be far more analytical in our appraisals of personality factors than is usually the case with laymen.

Personality as the Social Self.—The social side of the individual is not only emphasized by some writers, but is regarded as being the essence of personality itself. Gilliland,[7] for example, after reminding us of the threefold nature of the individual, as assumed by William James—the natural self, the social self, and the spiritual self—proceeds to identify personality with the social self. As he puts it, "In this relation man is appraised by and appraises his friends and acquaintances." It should be noted that this view does not make personality all inclusive nor synonymous with the functioning of the total integrated system of organism components.

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[4] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, p. 93. Quoted by permission of the publisher.

[5] H. C. Morrison, *Basic Principles in Education*, Houghton Mifflin Company, 1934, pp. 232–233.

[6] A. A. Roback, *The Psychology of Character*, Harcourt, Brace & Company, 1927, p. 159.

[7] A. R. Gilliland, Problems of Personality, *Journal of Abnormal and Social Psychology*, 23: 370–371, 1928.

The above view is concurred in by F. H. Allport[8] who holds that "with the exception of a few traits, personality may be defined as the individual's characteristic reactions to social stimuli, and the quality of his adaptation to the social features of his environment." May[9] subscribes to this view also when, after commenting on the origin of the word personality, he says, "According to the original meaning of the term, personality is that which makes one effective, or gives one influence over others. In the language of psychology it is one's *social stimulus value.* Every individual may be regarded as a stimulus to every other individual with whom he comes in contact." May goes on to say that in the logic of the case a weak individual will have little effect on others while a strong personality will have considerable influence with his fellow men. The difference is ostensibly one of relative stimulus value.

Personality as an Aggregate of Components.—Probably the most common approach to the meaning of personality is the practice of regarding it as an aggregate of integrated components. In their summary of definitions up to 1921, the Allports[10] found that most of them (definitions) were concerned with the enumeration of factors or components of personality. This view is subject to the danger of regarding different aspects or reaction systems of the organism as being to some extent independent of each other, and of thinking of each as a discrete entity in its own right. As a matter of fact, it is now generally acknowledged, even by those who do not espouse the organism-as-a-whole view in its extreme gestaltist form, that the organism is essentially a unified mechanism which is something more than the sum of its parts, and that all aspects thereof have meaning and properties only in relation to all other aspects.

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[8] F. H. Allport, *Social Psychology,* Houghton Mifflin Company, 1924, p. 101.

[9] M. A. May, *The Foundations of Personality,* in *Psychology at Work,* P. S. Achilles (Ed.), Whittlesey House, McGraw-Hill Book Company, Inc., 1932, p. 82.

[10] F. H. Allport and G. W. Allport, Personality Traits: Their Classification and Measurement, *Journal of Abnormal and Social Psychology,* 16: 6–40, 1921.

There is the difficulty as well, of regarding the personality as a collection of unified "traits." As later discussions in this volume will show, the whole trait idea is open to question because of conflicting interpretations for and against the doctrine of "specificity" in conduct and ideal. Psychologists are, of course, aware of these implications and generally safeguard their statements by speaking of the *integration* or *fusion* of all interacting components of the personality.

After discussing the inability of psychology to make a scientific analysis of personality, Woodworth[11] gives a provisional meaning to the term by saying that it does not refer to any specific activity but that a person can reveal his personality by the manner in which he performs particular activities. To quote, "When we think of his personality, we have in mind some quality of his total behavior. . . . Personality, then, is the quality of the individual's total behavior, it is how he acts, when his activity is taken as a whole."

Symonds[12] speaks of personality as a totality of major factors when he says, "Personality refers to a more complete description of the constitutional make-up including physique, intelligence, temperament, and character. More specifically it sometimes refers to the adequacy of personal adjustments, also, especially in social relationships." Brooks[13] expresses much the same view when he defines personality as "the individual's peculiar integration of instinctive-, emotional-, and habit-reaction systems, together with his merely physical differentiating characteristics. . . . In fact, all his traits, both useful and useless, as well as those which actually interfere with his adjusting himself to life's situations."

In his monumental book dealing with the historical development of character psychology, Roback[14] also defines personality as "The sum total of all our cognitive, affective, conative and even physical tendencies. The sum total here does not mean a simple addition but an integration." This statement is couched in the language of the older psychology, but it means that personality is essentially a composite of all reaction tendencies.

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[11] R. S. Woodworth, *Psychology*, Henry Holt & Company, 1929, pp. 552–553.

[12] P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1931, pp. 560–561.

[13] F. D. Brooks, *op. cit.*, p. 350.

[14] A. A. Roback, *op. cit.*, p. 159.

Morrison[15] has much to say about the personality concept, but hesitates to give a definition since he does not believe that the body (adaptive organism) is a part of it or that personality can be thought of apart from concrete developments in the form of learned adjustments. He does, however, speak of personality as "the sum total of what an individual has come to be by learning the cultural products of social evolution." In his conception of personality, he proposes to hold to a "middle path between mysticism on the one hand and materialism on the other."

It is clear then that those who think of personality as a composite of all traits or interdependent reaction systems differ from those who hold it to be the social side of the individual only in that they are more inclusive in their conception of the term. All agree that personality is an integrated phenomenon of the organism, but differ in the matter of including various aspects of that organism which are obviously not independent parts, but which have been given convenient labels.

Personality as the X Factor.—There is another conception of personality which, although quite intangible, should probably be given consideration since it comes from a modern educator who thinks that others have lost their way, as it were, in their insistence upon a materialistic explanation of personality. We have reference to Prof. Melvin,[16] who decries the fallacy of thinking of personality in terms of substance. He regards it as the "vital center" of our total existence, "which is in no sense comparable to physical substance or mechanisms. This sounds very mysterious, of course, but Melvin declares that it is "far better to be accused of mysticism than to be justly accused of willful and deliberate ignoring of obvious data." By obvious data he means intangible qualities and characteristics possessed by great statesmen, poets, artists, teachers, etc., that are not clear to psychologists, especially to those who attempt to estimate personality by summing up a list of so-called personality traits. He calls these unknown powers "*X* factors," which are to him obviously not substantive in nature and which are thus not amenable to objective detection. Here we have an interpretation which makes personality an unknown factor and presumably spiritual in nature. Of course, this view has possibilities since it may be that our objective explanations are not comprehensive enough to include all the factors involved, some of which may resist detection because we have not learned their relation to the physical world.

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[15] H. C. Morrison, *op. cit.*, pp. 39, 239.

[16] A. G. Melvin, *Building Personality*, John Day Company, Inc., 1934, pp. 56, 203–209.

May's Summary of the Personality Situation.—In a summarized presentation of the foundations of personality, May[17] criticizes the tendency of behavioristic psychologists to define personality almost exclusively in terms of an individual's reactions or responses to others. He contends that the original meaning of the term is still valuable in determining what we mean by "personality." In short, an individual's personality is defined also "by the responses that others make to him as a stimulus." In this sense one's stimulus value is determined by the quality of his various interrelated characteristics such as his voice, his manners, his language, and his physique.

As May says, this is in accord with the common-sense view held by untutored individuals. The adjectives which they use to describe another's qualities have reference not only to his social reactions but to him as a social stimulus. Thus personality is a two-sided concept including both an individual's reaction side and his stimulus side as they influence others. May is wary of definitions where broad, nonscientific terms are involved, but ventures that "as a working hypothesis, personality might be characterized as that total organization of reaction tendencies, habit patterns, and physical qualities which determine the individual's social effectiveness."[18] It will be noticed that this conception of personality is unusually broad, involving an individual's stimulus value to others as well as his complete system of reaction tendencies. In addition, it includes the more popular emphasis on physical qualities. In view of May's standing in this field, his summary of the personality concept may well be regarded as significant.

II. DISTINCTION BETWEEN PERSONALITY AND CHARACTER

As a rule psychologists who regard personality as a sum total of all personal attributes tend to speak of "character" as one phase or component of that composite. In short, personality is the broader term including character as one of its aspects. It will be noticed in psychological literature that character is most often regarded as having reference to an individual's behavior as related to laws, social conventions, and moral considerations. By character is usually meant the average quality of our specific acts as appraised by those responsible for setting the standards of the group.

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[17] M. A. May, *op. cit.*, pp. 81–83.

[18] *Ibid.*, pp. 84–85.

Character as Ethical Behavior.—The common distinction between the meanings of personality and character may be illustrated by referring again to some of the writers whose conceptions of personality have already been recorded. Gilliland,[19] who regards personality as the social side of the self, refers to character as "the moral or ethical phase of personality. It is that phase of life which is evaluated on the basis of right and wrong." Symonds[20] also speaks of character as being less inclusive than personality and more concerned with the ethics of conduct. To quote him, "in general, character refers to the habits and skills with which one faces life's situations, particularly such as are social, and has special reference to the organization and consistency of conduct."

These conceptions are confirmed by Schwesinger[21] who writes that "character, as a term, is sometimes used as denoting that field of human behavior which involves conformity to conventions, ethical and moral standards." J. B. Watson[22] makes the same distinction between personality and character and reasons accordingly that while thieves and liars would stand low in character rating they might in some cases possess attractive personalities.

Character as Inhibition of Impulses.—Roback,[23] who has reviewed a vast amount of literature in the character field, disagrees with the foregoing definitions and advances his own doctrine that character is "an enduring psychophysical disposition to inhibit instinctive impulses in accordance with a regulative principle." This proposal, which refuses to consider character as the ethical quality of one's behavior, in contrast assumes an inner force or mechanism as a guiding principle which *regulates* behavior. On first thought this is quite in harmony with the theological doctrines of character building and self-denial, but apparently runs counter to the testimony of recent investigations[24] which indicate that, for children and youth at least, behavior is a function of each situation as well as of the "set" or previously developed disposition of the organism to behave in a characteristic way. Furthermore, Roback's regulative principle might not be a righteous one. Theoretically it could be the code of the gangsters.

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[19] A. R. Gilliland, *Genetic Psychology,* Ronald Press Company, 1933, p. 317.

[20] P. M. Symonds, *op. cit.,* pp. 560–561.

[21] G. C. Schwesinger, *op. cit.,* p. 94. Quoted by permission of the publisher.

[22] J. B. Watson, *Psychology from the Standpoint of a Behaviorist,* J. B. Lippincott Company, 1919, p. 422.

[23] A. A. Roback, *op. cit.,* p. 450.

Coghill,[25] who is interested principally in the biological aspects of character and personality, agrees with Roback that inhibition is the "core of character." He thinks of the higher brain center as the essence of personality and the latter as instrumental in securing adaptive inhibitions which are imperative to the harmonization of conflicting tendencies and attitudes.

III. THE COMPONENTS OF PERSONALITY

The Problem of "Trait" Definition.—Before one can place a proper evaluation upon any definition or description of personality which involves the idea of an aggregate of components, it is necessary to take into account some current issues concerning the nature of so-called "traits." This problem will also be treated in some detail later, but should be mentioned here briefly since all conceptions of personality as an integrated fusion of components are dependent to some extent upon one's belief regarding the psychological nature of traits.

If one thinks of a trait such as loyalty, for example, as a unified and consistent mode of behavior within an area of reaction delimited by the trait name given, he is confronted with the fact that, according to the testimony of some of our best evidence, no one's actions are entirely consistent. It has been shown[26] that as a rule a response is influenced as much or more by the exigencies of a situation as by any guiding principle of behavior that may be possessed by the reacting individual. At least this is very true of children and youth. In the case of reasonably mature individuals, it is probably true, however, that behavior becomes progressively more consistent up to a limited point as maturity and experience leave their modifications.

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[24] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928.

[25] G. E. Coghill, The Biologic Basis of Conflict in Behavior, *Psychoanalytic Review*, 20: 1–4, 1933.

[26] H. Hartshorne and M. A. May, *ibid.*

If on the other hand one regards behavior as being almost wholly specific he finds it difficult to locate any definite traits or unified components of any kind with which to describe a given person's personal qualities. He is practically required to appraise an individual as a complex aggregate of literally thousands of "specifics" as far as behavior is concerned. This is particularly true if he thinks of personality in terms of reaction tendencies rather than as a name for an individual's personal stimulus value. This view is not wholly consistent with the well known fact that many people do ultimately develop a degree of consistency within the area of a so-called trait that has many of the ear-marks of a unified component.

Probably the sensible position would be that of regarding behavior as being at first (in childhood) very specific, owing to limited experience and the obvious absence of controlling factors, such as standards, ideals of virtue, comprehended social codes, etc., but progressively more consistent as the individual matures and conforms to the sanctions and mores of his group. Thus, personality should probably not be thought of as either a collection of unified blocks of behavior called "traits" or as a sum of discrete and independent responses called "specifics." At any rate, it is important to consider the implications of these views in evaluating proposed statements of the components of personality. Any factors of personality that are advanced as crucial in a list of components must be considered in the light of the specificity problem.

Nevertheless some writers give expression to their views and propose complete or partial lists of the essential components of personality without regard to the involvements just mentioned. Others base their proposals on the testimony of carefully conducted and evaluated investigations. A few of these are presented here for the purpose of giving an insight into the various views on this subject as held by workers in the field.

Typical Groupings of Personality Traits.—Although psychologists know that personality cannot be regarded as simply the sum total of so many traits, they do frequently endeavor to provide an insight into personality by studying an individual's traits, regarded as more or less loosely organized systems of tendencies to act, in relation to each other in the whole pattern of response.

A typical list involving six alleged traits and their subdivisions is given by Dashiel:[27]

I. Physique
  size, strength, health
  beauty
II. Intelligence
  general
  special aptitudes
  knowledge equipment (habits of perceiving, discriminating, etc.)
III. Motility
  hyperkinetic vs. hypokinetic
  impulsive vs. inhibited
  graceful vs. awkward
IV. Temperament
  quickness
  intensity
  stability
  emotional attitude
V. Motivation
  directions
  focalization
  extroversion-introversion
  ascendance-submission
  methods of adjusting to difficulties
VI. Sociability
  social perceiving
  socialization of habits

Gilliland[28] objects to long lists of elements or traits such as those by Brandenburg[29] and Allport.[30] According to him "one important basis of any classification is utility and certainly any long list of personality traits becomes largely meaningless and useless owing to the overlapping of traits and the lack of clear-cut distinctions between them." Furthermore, he is not in sympathy with the notion that behavior is always specific. Thus this writer lists a few fairly "mutually exclusive" traits which to him constitute the personality. These are (1) intelligence, (2) aggressiveness or forcefulness, (3) sociability, (4) personal appearance, and (5) morality.

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[27] J. F. Dashiel, *Fundamentals of Objective Psychology*, Houghton Mifflin Company, 1928, p. 552. Adapted from F. H. Allport, *Social Psychology*, Houghton Mifflin Company, 1924, pp. 102–125.

[28] A. R. Gilliland, *op. cit.*, pp. 371–373.

[29] G. C. Brandenburg, Analyzing Personality, *Journal of Applied Psychology*, 9: 129–155, 1925.

[30] F. H. Allport, *op. cit.*, Chap. 5.

Woodworth[31] also gives a short list of the essential traits of personality as follows: (1) physique, (2) temperament, (3) individual limitations, and (4) intelligence. He prefers, however, to treat intelligence as a phase of possible personal limitations.

It is interesting to notice the components of personality as advanced by psychiatrists. These usually cluster around temperament as a sort of a core and are as a rule assigned decidedly inherent limits as far as possibilities of change are concerned. Fry and Haggard[32], for example, list (1) physique, (2) impulse or driving force, (3) intelligence, (4) temperament, and (5) ego as constituting the prime elements of the personality. In a rhetorical vein they go on to describe these components as they would supposedly obtain in different "types" of individuals. And all the way through inborn temperament and ego are accorded the leading roles in personality.

Rosanoff[33] has made much of the (1) temperamental factor in normal personality, which factor he places at the head of his list which includes in addition, (2) intelligence, (3) sexuality, (4) physical factors, and (5) such more minor components as mathematical and musical talent. Rosanoff stresses most of all the assumption that the so-called "normal personality" reflects in a mild but clearly discernable fashion the same temperamental components which characterize out and out psychotic individuals. These components are alleged to be definitely inborn and are said to take the form of (1) normal (conservative, stable, balanced), (2) hysteroid or antisocial, (3) cycloid, (4) schizoid, and (5) epileptoid temperaments.

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[31] R. S. Woodworth, *op. cit.*, pp. 553–556.

[32] C. C. Fry and H. W. Haggard, *The Anatomy of Personality*, Harper & Brothers, 1936, pp. 17–30.

[33] A. J. Rosanoff, *Manual of Psychiatry*, 6th ed., John Wiley & Sons, Inc., 1927, pp. 333–354.

The Theory of "Structures" in Personality.—A unique and impressive scheme of personality analysis has been worked out by Morrison[34] in connection with his theories of the educability of man. According to him, "major learnings" soon begin to be acquired by the maturing infant as he responds to the complex of environmental influences. He first of all develops a few outstanding tendencies on attitudes toward life which immediately operate to determine the character of the "minor learnings" which will cluster about these "major learnings." The major learnings, which are said to influence the kind of specific minor learnings which will accrue, are called "structures" and are said to constitute the main "fabric" of the personality. For example, if in his childhood an individual through perverse learning picks up a dread or phobia, a "structural mal-adaptation is formed which not only excludes experience out of which right learnings might emerge, but experience accrues out of which further maladaptions arise" (page 242). Morrison has drawn up a chart which illustrates his scheme of the "fabric" of personality. It is presented in Fig. 1.

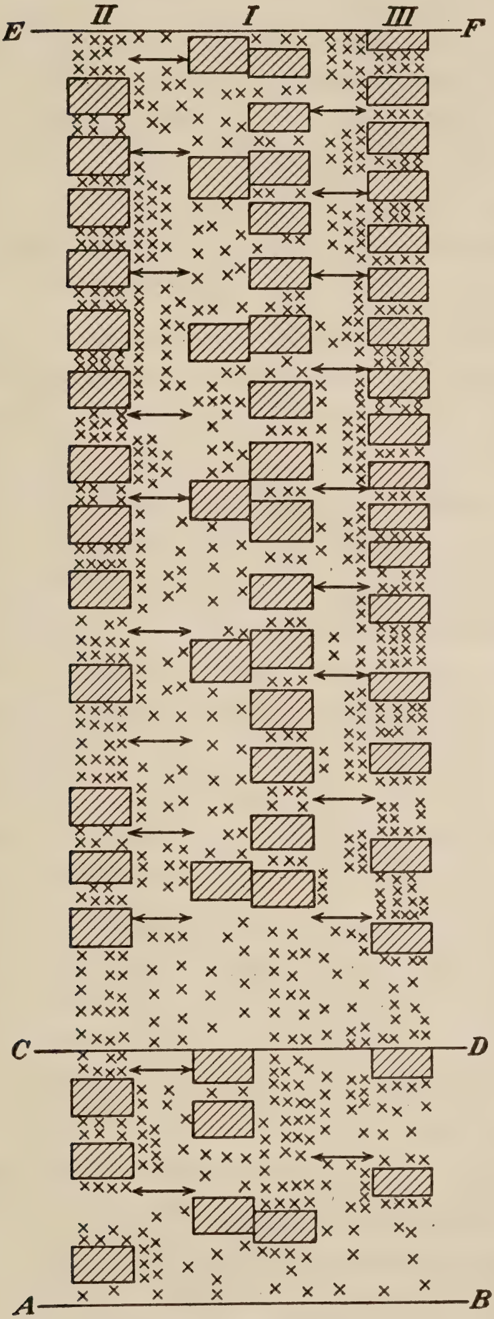
This writer avoids the "trait" issue and says little about "specificity" except to mention that the major volitional structural elements are themselves specific. That is to say, one does not learn self-denial in general but as the result of specific acts. However, self-denial, where and how developed, becomes a major structure and the possessor thereof "exercises self-denial where self-denial is appropriate." This sounds very much like the "consistent trait" idea.

Morrison classifies his structures into six groups as follows: (1) *structures learned in infancy* such as obedience, family affection, walking, talking, self-dependence, thrift, caution, and care of

[34] H. C. Morrison, *op. cit.*, pp. 239–290.

Fig. 1.—Scheme suggesting fabric of personality. (*From H. C. Morrison, Basic Principles in Education, Houghton Mifflin Company,* 1934, *p.* 244.)

In the figure the rectangles stand for the major structural accretions to personality while the crosses indicate minor learnings (possibly comparable to non-integrated "specific" learnings). The central column of double rectangles stands for the volitional and symbolic learnings—language, graphic representation, and mathematics. The left column indicates the presence of tastes and ideals which have grown out of appreciations, and the right column represents intelligent insights which have grown out of learnings in the field of the sciences. The horizontal arrows point out the direction of integrative processes which "weld" the structures into a unique individual. From *AB* to *CD* is the period of childhood and *EF* marks the line of maturity.


II
I
III
E
F
C
D
A
B

For descriptive legend see p. 14.

our bodily needs; (2) *the volitional structure* with its attendant dispositions to act adaptively; (3) *the thought structure* which includes principally language, in all its forms, graphic representation, and mathematics; (4) *the moral structure* conceived as fundamentally righteous behavior as contrasted with ethical or pragmatic living; (5) *humanistic values* or cultivated tastes in the form of appreciation for the beautiful, the good, and the true; and (6) *intelligence* as the capacity for understanding mechanical operations, the principles of health, the nature of living things, and the complexities of the social order.

Implications of the Doctrine of "Specificity."—As a result of giving conduct tests of honesty, service, and self-control to some ten thousand youth over a period of five years, Hartshorne and May[35] (and others) came to some quite definite conclusions regarding the nature and organization of character and personality. They found in substance that there is no such thing as a "trait" of honesty or service, for example, if by trait we mean some disembodied force or factor in the inner organization of a child which acts to regulate his behavior along consistent lines. What they learned was that, except in the case of a direct repetition of a previous situation, the behavior of a given individual was unpredictable. In short, not a single youth was encountered whose acts were perfectly and consistently honest or, conversely, dishonest. The investigators found some relationships between the average quality of a subjects acts and such factors as home conditioning and social status but conclude that in general, at least in the case of children, behavior is a specific function of the nature of the situations encountered. A child does not organize his responses around what adults speak of as "guiding principles" or "standards"; rather he responds to the "coarser and more utilitarian aspects" of situations in ways which he has learned in connection with similar situations. This means that he does not generalize or moralize, nor does he adapt his behavior to the environment as a whole in harmony with social or moral endorsements.

The conclusion that the doctrine of specificity of conduct is an established fact is espoused by a number of other psychologists who could be mentioned. For example, Symonds,[36] after commenting on the fact that there is no such thing as general character (except as an abstraction), contends, with Hartshorne and May, that "what we find are honest and dishonest acts not dishonest and honest persons."

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[35] H. Hartshorne, and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, pp. 355–360.

[36] P. M. Symonds, *op. cit.*, p. 561.

While Hartshorne and May have come out frankly with the conclusion that character and personality "traits" do not exist, since, in the case of children and youth, behavior is specific and elicited by the nature of each stimulating situation plus the natural tendency of immature individuals to seek immediate satisfaction, they make it clear that integration of behavior can be accomplished gradually "in proportion as systems of response are attached to principles, laws, and ideals, as well as to concrete demands of immediately perceived situations." They point out also that, in view of the frequent incompatibility between these two objectives, it is much more difficult to adjust to the demands of both than to one or the other taken alone.

It is clear, then, that while these investigators have built up a conception of character and personality which, in the case of children and youth, is practically an elaborate aggregate of more or less nonintegrated "specifics," they recognize that under the influence of generalized standards and the demands of organized society these same individuals may gradually come to acquire a consistency and adaptability of conduct that approximates our notion of "traits" or "structures" when defined as *relatively* consistent tendencies to act in predictable ways. It may be that there is no fundamental difference between the theses of "trait" and "specificity" exponents. This is especially evident if we acknowledge the rather patent fact that the typical responses of youth are a function of both the circumstances of a given situation as they affect the child, and of the organism "sets" or dispositions to act in characteristic ways that have been built up by the effects of previous experiences.

"Emotionalized Attitudes" as the Components of Personality. In his recent stimulating volume on secondary education, Briggs[37] devotes much space to the development of an understanding of character and personality conceived as a composite of "emotionalized attitudes." After acknowledging the desirable fact "that all human actions should be inspired by the intellect" he goes on to say that in his opinion very few acts are based on purely intellectual considerations; in fact he insists that they are usually affected very materially by feelings and emotions. When intellectual processes are brought into play they are said to be usually enlisted in an effort to rationalize a position previously acquired through impulse or emotional preferment, rather than on rational thought. This line of logic is supported by reference to the pioneer psychologist, G. Stanley Hall, who once said that "our intellect is a mere speck afloat on a sea of feeling."

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[37] T. H. Briggs, *Secondary Education*, The Macmillan Company, 1933, pp. 370–438. Quoted by permission of the publisher.

Proceeding on this thesis, Briggs concludes that men order their lives on the basis of emotionally determined attitudes, which become essentially the determiners of conduct and character. In fact, he says, "It would not be far from the truth to say that character is the sum of one's emotionalized attitudes." In this sense, he reasons, it becomes the duty of the school and other agencies to proceed with character and personality development from the point of view of emotionalized attitude building.

Thus this writer has portrayed a picture of personality (practically synonymous with character as used by Briggs) conceived as the sum of all life's preferences and prejudices classified as attitudes.

Briggs's conception of attitudes (which he speaks of in much the same way as others do of "traits") is that they are originally highly specific, but that there develops an undeniable tendency for them to "spread." For example, if an individual has been made ill by eating oysters it is easy for him to become hostile toward other forms of shellfish, or if one has been irritated by an alumnus of "Freshwater College" he might readily tend to dislike all alumni of that college. This is much like Morrison's previously discussed declaration that original experiences result in the development of major "structures" or premises which in turn determine the attitudes that will be taken toward subsequent events in experience.

An understanding of personality from this point of view is consequently contingent upon the nature of these "emotionalized attitudes." According to Briggs, they are not only emotional at their core, but are highly persistent and resist being discarded even when their irrational or untrue nature has been disclosed to the "intellect." Thus, a highly educated scholar or scientist may find it very difficult to divest himself of an unanalyzed preference for an old political party long after his discovery that differences between the political philosophy of the major parties have practically disappeared.

Briggs's attitudes are thus fairly synonymous with "traits" and "structures" as these have been described by their exponents. Thus, his attitudes may be thought of as being originally specific and as gradually becoming more or less general. This position is obviously the common-sense view and represents a compromise between extremes. In the end, it means that with the evolution of social experience an individual's specific dispositions to behave within a given area of experience (loyalty or tolerance, for example) tend gradually to become more and more unified, but that they never reach the place where they represent more than a loosely knit system of integrated reaction tendencies.

Briggs and his students have boiled the tentative attitudes of personality and character down to 30 essential units each of which is to be thought of as a sphere of behavior in which original "specifics" have subsequently spread or become in part generalized and within which responses may sometimes be inconsistent while at other times and places quite consistent. The attitudes in question follow:

honest
cooperative
democratic
healthy
thrifty
tolerant
industrious
intelligent
public-spirited
dependable

efficient
appreciative
courteous
alert
sincere
conscientious
just
resourceful
self-controlled
trustworthy

reliable
courageous
home-loving
accurate
progressive
competent
loyal
capable
truthful
tactful

IV. "DRIVES" SUPPLEMENTARY COMPONENTS OF PERSONALITY

A consideration of such factors as "traits," "structures," or "specific" reactions as the elements of the integrated personality neither tells the whole story nor does justice to the complexities of the human organism. There are other important factors in personality that are of a different nature than traits, or their equivalent, but which make a significant contribution to an understanding of the behavior patterns of the normal human being. Reference is being made to those dynamic factors variously called will power, instincts, needs, drives, urges, wants, desires, cravings, etc. A brief study of these supplementary but indispensible components will consummate our partial survey of the various conceptions of the essential elements of personality.

Theory of the "Will" in Personality.—This thing called "will" has popularly been regarded since time immemorial as some kind of dynamic force impelling the unruly organism to forgo immediate pleasure in favor of a more virtuous self-denial. In short, it is a perfect example of the discredited mental "faculties" of nineteenth century fame. In spite of the fact that "There is simply no such thing as an indwelling entity called Will which is sometimes inherently benign, often inherently perverse, and which is subject to discipline and training,"[38] it is practically a major operation to remove belief to that effect from most individuals.

Of course, we still perform the exact functions and inhibit the same undesirable tendencies that have traditionally been subsumed under the virile expression "will power," but we no longer indulge in the fallacy of deifying an abstraction by regarding will power as a corporal entity or as an ethereal force with a separate existence instead of as a *process* which is, to some extent at least, physiological. In brief, will power may well be described as a partially generalized disposition to act or refuse (inhibit) to act in characteristic ways. It is another name for the "set" of the organism in any particular respect that has been induced or built up in the complex maelstrom of experiences, both satisfying and otherwise. It (will power), too, fluctuates to some extent from situation to situation and is subject to the limits of consistency that characterize any other so-called "trait."

"Instincts" as Motivators of Behavior.—This is another problem that will be treated at some length in a later chapter, but which should probably be given some mention in connection with the elements that go to make up the total personality.

The first difficulty with instincts is that they can be defined in four or five different ways,[39] none of which can stand the test of physiological and psychological examination. Furthermore, when defined popularly as strictly unlearned functions that appear at birth or with the advancing years, they meet the difficulty of demonstrating any original reactions that can not be more satisfactorily explained in terms of the natural response of structure, according to its mechanical design, to an external or intraorganic stimulus. As for alleged instincts appearing at any time after birth, particularly after an interval of months and years, it is impossible to rule out the undeniable effects of both maturation of structure,[40] and those innumerable and complex modifications, effected by environmental processes, that we commonly call "learning."[41]

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[38] H. C. Morrison, *op. cit.*, p. 260.

[39] W. C. Trow, *Educational Psychology*, Houghton Mifflin Company, 1931, pp. 15–22.

Probably the worst difficulty of all in thinking of instincts as the dynamic element in personality lies in regarding them as nonmaterial or disembodied categories of force which are themselves outside of the circuit of cause and effect, but which are capable of exercising profound effects on bodily behavior, especially behavior designed to satisfy the demands of the instincts themselves.[42]

In view of these considerations, it is probably best to disregard the whole instinct hypothesis as an explanation of human striving. It would be more intelligent to discard a word as an alleged explanation of complicated phenomena and to make an attempt to penetrate the mysteries of the phenomena themselves. Thus, we would avoid the fallacy of oversimplification of mental events.[43] Efforts in this direction have so far resulted mainly in regarding former "instincts" as the natural reactions of an organism such as ours in the light of its mechanical make-up and degree of maturation, and as elaborately modified or conditioned by learning. Thus, instincts go by the boards just as "will" passed out of the personality picture. Those who object to this proposed demise should remember that we admittedly go on doing the same things to develop "strong" character and personality qualities that we always did but now in the name of more defensible psychological processes.

Organic and Social Needs as Dynamic Drives.—In our quest for a tangible objective foundation of human motivation we naturally turn to the realm of material requirements. Our physical bodies are obviously not self-sustaining or independent of their surrounding. They are, rather, characterized by certain well known material needs which can be satisfied only by recourse to certain activities calculated to secure the ingredients or satisfactions desired. We are in dynamic relation to our environment and dependent upon it for the requirements of life. Thus we are incited to action in an effort to maintain our organic equilibrium or, to put it another way, to ward off unpleasant strains and stresses. To be specific, we must have food, water, rest, sleep, freedom from too much pain, relief from excessive heat and cold, and to some extent sex adjustment.[44] These needs are tangible and in the nature of the case drive us into action in their behalf. In this sense an understanding of the complete personality picture is not available unless we take into account the drive of organic needs, in addition to the usual list of interdependent traits.

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[40] A. Gesell, The Study and Guidance of Infant Behavior, in *Psychology at Work*, P. S. Achilles (Ed.), Whittlesey House, McGraw-Hill Book Company, Inc., 1932, pp. 33–43.

[41] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, pp. 106–111.

[42] W. McDougall, *Social Psychology*, John W. Luce & Company, 1923.

[43] H. A. Carr, The Quest for Constants, *Psychological Review*, 40: 514–532, 1933.

When one contemplates the lines of human activity traceable to physiological necessities, he comes face to face with business and industry in all their vastness including transportation, communication, manufacturing, mining, forestry, agriculture, and many lesser endeavors. Furthermore, the home with all its intricate relationships and antecedent romance and courtship is brought into the setting. The same is true of much of music and art. It is evident, then, that much is explained by a study of the fundamental material needs of the individual.

In the social sphere we find much the same thing. Practically all normal individuals, both young and old, have an intense craving to be recognized as worthy, to be respected and admired, and perhaps most of all to be regarded as successful.[45] All resent being disparaged and shunned, and since each individual is dependent upon others for all these gratifying responses to him as a stimulus he is under compulsion to do what he can to make himself reasonably attractive. That people strive endlessly to gain approval and satisfaction for their "egos" is abundantly attested to by the world of fashion, manners, education, and many other such areas of activity. Of course, a given individual will not strain himself to merit the approval of just anyone; he studies to be approved by those who rate well with him or who mean something to his welfare. Unfortunately, many people do not strive nearly so hard to satisfy their social desires as they do in the case of organic wants. Thus we have the glutton, the libertine, and the delinquent. Nevertheless, the social drive is a mighty force and explains an enormous amount of human endeavor. It is a dynamic component in personality.

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[44] E. L. Thorndike and A. I. Gates, *Elementary Principles of Education,* The Macmillan Company, 1929, pp. 64–65.

[45] W. C. Trow, *op. cit.*, pp. 37–40.

Psychological Needs as Dynamic Elements in Personality.—By psychological needs we mean here an individual's desire for unrestricted activity or for a reasonable amount of freedom to work out his own plans and purposes.[46] In the juvenile world this includes the whole realm of play, with its many implications for moral and social adjustment,[47] and also the well known child-centered school with its theory of stimulation through purposeful activity and felt needs.[48] Books have been written on these themes and whole school systems have been revamped. All this has been done in an effort to ensure for children their inalienable rights to be interested in what they do and to be given opportunity for such legitimate unrestrained activity as their natures call for. When temperately and intelligently guided this movement to stimulate children to creative effort is in harmony with the current emphasis on mental and emotional hygiene for the insurance of well-rounded personalities.

The psychological drive (as defined) is also prominent in adult life. It is concerned in man's age-old efforts to gain a reasonable amount of freedom to pursue a career of his own choosing and to participate in the determination of the common policies that are to regulate his behavior. History is replete with examples of the results of too prolonged frustration of the human desire for liberty.

It should be clear therefore that what we have called the psychological drive is an important and irreducible element in the total symmetrical personality. Without taking it into account one would get only a partial view of the whole configuration no matter how many "traits" or elements are enumerated as constituting the mesh of personality.

[46] *Ibid.*, pp. 32–37.

[47] H. C. Lehman and P. A. Witty, *The Psychology of Play Activities*, A. S. Barnes & Company, 1927.

[48] H. Rugg and A. Shumaker, *The Child-Centered School*, World Book Company, 1928, pp. 1–67.

V. RELATIVITY OF THE PERSONALITY CONCEPT

In view of the fact that the "trait" concept has turned out to be so equivocal in meaning and so ambiguous as a description of an individual's personality attributes, one is tempted to discard the concept altogether as an oversimplification of really complex behavior and to resort to a purely objective study of reactions without attempting interpretations or popular descriptions of personality traits.

The English psychologist Vernon[49] reasons that such a decision would be lamentable for two reasons: first, because the trait idea is such a popular and universal concept that it cannot be ignored by a science that professes any utility. Thus, he concludes that social and applied psychology, at least, should "face the facts and do the best they can to salvage it (trait) for use in a systematic psychology of personality." Second, because "rigorous objectivity is a blind alley in psychology," and when its methods are used consistently to translate human phenomena into scientific categories "the essentials of personality disappear." For example, in conversing with a friend one can, from a practical interpretive standpoint, judge from facial expressions and movements when he has been annoyed at some remark, and can subsequently say something appropriate to mollify him. But the strictly objective scientist typically "subjects a number of individuals to standardized situations, which have been selected so as to arouse 'emotion'; he photographs the consequent muscular contractions in the faces of these individuals, and arrives at the purely negative conclusion that no particular conformation of the facial muscles is consistently associated with any particular situation." As an instance of this exacting technique Vernon cites the well-known work of Landis.[50]

All this means that meaningful but subjectively interpreted experiences of human emotion, for example, lose their identity when subjected to strictly objective observation and measurement.

The Biosocial Nature of Personality Traits.—Vernon[51] points out the important fact that a man's personality has no meaning considered in the absolute sense apart from the appraisals of others since any individual's estimate of another's personality traits is obviously a function of his own peculiar personality organization. This is why two or three apparently qualified persons will often disagree markedly as to the merits of another's qualities. Each interprets according to some scale of values or scheme of appraisal that is an expression of his own individuality, and since no two individuals are exactly alike in the proportional blending of integrated elements of personality it follows that no two judgments will be identical. Besides, as Morton Prince[52] once declared, one tends to concentrate on a limited number of a person's qualities or traits to the neglect of others.

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[49] P. E. Vernon, The Biosocial Nature of the Personality Trait, *Psychological Review*, 40: 533–535, 1933.

[50] C. Landis, Studies of Emotional Reactions: II. General Behavior and Facial Expression. *Journal of Comparative Psychology*, 4: 447–509, 1924.

[51] P. E. Vernon, *op. cit.*, pp. 535–537.

These considerations naturally lead to the conclusion that personality traits are, strictly speaking, biosocial in nature rather than merely biophysical. They possess meaning in the *relative* sense largely since they are dependent upon varying social relationships and subjective appraisals. As previously mentioned, facts of this kind led May[53] to stress the *social stimulus* value of the personality as being more significant than a list of his personal reaction tendencies. In short, it is said that, since different people's estimates of the same individual differ so noticeably, his traits are not so much his own "properties" as they are the "impressions" he makes in the minds of others.

This relativity of personality traits is attested to by Schwesinger[54] when she says, "for in the mesh of personality, the appearance, weighing, and worthwhileness of any trait is surely a relative matter; relative to the rest of the personality make-up as well as to the situation." She illustrates by reasoning that while "ambition" might well be encouraged in a person of good intelligence it had probably better be curbed in the case of a moron, and that to be "weak-willed" in connection with a major issue is far different from being the same when confronted with a minor problem.

The Possibility of Objectifying Traits.—Although it is hardly possible completely to objectify a personality trait, since it usually refers to a variety of both consistent and inconsistent discrete acts subsumed under the trait name, Vernon[55] believes that it can be made far more objective if it is considered in the light of a few criteria. For instance, we will become much better acquainted with a given individual's so-called "trait" of "irritability" if we will observe carefully the *deviations* and *intensity* of his overt reactions in concrete situations requiring self-control. The illustration given is that of a man who has just experienced the dropping of a plate by a restaurant waiter.

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[52] M. Prince, Why We Have Traits—Normal and Abnormal: The Theory of the Integration of Dispositions, *Journal of Abnormal and Social Psychology*, 23: 422–433, 1929.

[53] M. A. May, *op. cit.*, pp. 81–85.

[54] G. C. Schwesinger, *op. cit.*, p. 96. Quoted by permission of the publisher.

The next specification is to observe the *quality* and *intensity* of the stimulus needed to bring out the response. To use the illustration, we would consider a man irritable who frowned deeply at the dropping of the plate, but if he should respond in the same way after the waiter had dropped a plate of food on his head we would consider him "mild." Thus the trait is relative to the stimulus necessary to bring out a given response.

Another point to watch is the *frequency* and *consistency* with which a characteristic response is elicited by the same or similar situations. Observations on this point obviously contribute much toward our understanding of the degree to which a trait can be said to be consistent or general. In the illustration, it is a question of whether the individual under examination behaves in much the same way under similar conditions of treatment from the waiter. He may act differently than usual (more composed) when someone of consequence is with him at the meal, but this atypical response would be traceable to a fairly apparent motive and does not then argue for inconsistency of behavior. Obviously, since the configuration of the situation was changed, the pattern of response was modified concomitantly. A consideration of this point causes one to realize that behavior subsumed under a trait name may not be so inconsistent after all, but may rather be entirely consistent when the varying circumstances of the situation are appreciated.

Finally, a person's "irritability," for example, must be considered in relation to the norms of behavior of the social group to which he belongs and in connection with the biases and points of view of the individuals who constitute this group. This is but another aspect of the relativity of personality traits. We know that a college student frequently enjoys a far different reputation with his schoolmates than he does with his pastor.

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[55] P. E. Vernon, *op. cit.*, pp. 540–544.

He is being evaluated from different points of view. On this point, Vernon quotes Kelley[56] as saying, "A certain Jew would have certain traits in Central Africa, others in the Ghetto in New York, and still others in Peking. This may seem confusing, since the person himself has not changed."

Thus, while there is no such thing as an "absolute" personality or an "absolute" trait, the latter concept can be thought of with some degree of objectivity if considered from the biosocial angle. In this way the trait of common parlance may possibly possess reliability as a psychological concept. Vernon[57] has summarized his reflections into a tentative definition of a personality trait as follows, "an individual is said to possess, or to be characterized by, a certain personality trait when he exhibits a generalized and consistent form, mode, or type of reactivity (behavior), and differs (deviates) sufficiently from other members of his social environment both in the frequency and intensity of his behavior, for his atypicality to be noticed by relatively normal and impartial observers, themselves members of the same environment."

This definition does not argue for the idea of traits as unified categories of behavior but evidently regards traits as names for general classes of behavior which overlap with one another. And lastly "apparent inconsistencies in personality are due to the over-simplifications introduced by applying these stereotyped trait names."

VI. THE GENETIC APPROACH TO PERSONALITY STUDY

Until comparatively recent times, the subject matter of psychology has been concerned almost exclusively with behavior problems of the adult individual. This was due in part to the prevalence of introspective techniques obviously not suitable to child study and also to a widespread belief that the events of infancy and childhood were of no special significance for an understanding of the character and personality of mature subjects. It was believed that childhood experiences, no matter how intense, left their impressions temporarily only and that they were not necessarily related in any causal sense with anomalies in the behavior of the subsequently mature individual. It was assumed by some also that the phenomenon of adolescence, which not so long ago was considered as a distinct break with the past, would eradicate or compensate for previous deficiencies and peculiarities of various sorts. Thus childhood as an aspect of the continuous life span was considered, from a psychological standpoint, to be relatively inconsequential.

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[56] T. L. Kelley, *Crossroads in the Mind of Man*, Stanford University Press, 1928, p. 30.

[57] P. E. Vernon, *op. cit.*, p. 542.

With the advent of more adequate knowledge concerning the permanent effects of early conflicts and other disturbances of personality, it became evident that what we might call a long-time view of personality development was imperative to an appreciation of the true nature of both adolescent and adult mechanisms of behavior. We will have to give the Freudians and other psychoanalysts much of the credit for pointing out the futility of studying cross sections or "stages"[58] of human life without reference to the events which preceeded them and which were ostensibly causal in their influence.

Definition of the Genetic Approach.—Thus there has developed that logically connected way of viewing the growing organism which has been called the *genetic* method. It proposes to study the facts of human (also animal and vegetable) life in the light of their genesis and causal relationships.[59] It begins with a careful scrutiny of the mechanisms of biological inheritance, proceeds with a study of the interdependent psychological and physiological natures of the organism, and finishes by viewing maturation and learning in their total span of operation from the genesis of the individual to the days of maturity or, if necessary, of senescence. It recognizes no discrete epochs or stages in growth which rate the exclusive attention of the psychologist. All life is a mesh of interrelated "sequences of integration at higher and higher levels"[60] and the genetic development of personality becomes a gradual process in which the individual is always necessarily the end product of all that has gone before. In short, the genetic method is the method dictated by the unalterable law of causation which lies at the very foundation of all efforts at prediction or control in human actions as well as in physical phenomena. This is the approach which we propose to attempt to follow in the development of our central theme of personality evolution. It is reflected in our plan of beginning with the foundations or major problems of personality and subsequently following the growing individual from birth through childhood, as reflected in home and school, to adolescence and maturity.

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[58] Until comparatively recently it was quite popular to divide the life span into so-called "stages" or "epochs." Shakespeare proposed periods based on the dianoetic language of poetry (*As You Like It*, Act II, Scene 7). E. A. Kilpatrick classified periods of growth according to the development of human social impulses (*The Individual in the Making*, Houghton Mifflin Company, 1911, pp. 59–60). Thorndike had divided life into what he called "educational periods" (Notes on Child Study, *Columbia University Contributions to Philosophy and Education*, 8: 13*ff*. 1903). Berman attempted a division of life into so-called "periods of glandular growth" (*The Glands Regulating Personality*, The Macmillan Company, 1921, pp. 256*ff*.). H. L. Hollingworth has offered a classification characterized by stages of human development (*Mental Growth and Decline*, D. Appleton-Century Company, Inc., 1927, pp. 45–46.).

[59] W. H. Burnham, *The Wholesome Personality*, D. Appleton-Century Company, Inc., 1932, p. 609.

Illustrations of the Genetic Method.—It should be mentioned that a number of outstanding workers in the child-study field have gained signal success in the use of the genetic approach. Prominent among them is Gesell with his "co-twin" and "paired-infant" techniques at the Yale University Child Clinic. Gesell[61] has made an intensive study of all phases of child growth. In the main, he discovered that development is an orderly exhibition or uniformity of sequence of events for all infants both normal and abnormal. Observing, for example, that no child ever adapted his responses to a square hole in a form board before managing a circular one, he concluded that "it is a law of nature that one event or performance should come before another at a given stage of development. This law of development makes infants of one age alike and injects law and order into the complications of child life."

After drawing up many individual behavior schedules Gesell charted a simplified schedule of general behavior for the first year of life.[62] This is shown in Fig. 2. While this chart is not regarded as a final scale of norms for practical use it does illustrate nicely the genetic method of attack on child-development problems and reveals what its author calls "the diagnostic force of the principle of progressive probability." The chart illustrates the coherent and consistent sequence of behavior development as it operates with normal children. It indicates as well that children who move from one response to another more rapidly than the average are likely to be above average in intelligence. Gesell has found that prediction of ability based on single comparisons with his general norms have far more than an average chance of being correct.

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[60] *Ibid.*

[61] A Gesell, Some Relations between Early Physical and Mental Growth, *Symposium on Physical Education and Health*, New York University Press, 1930, pp. 88–91.

[62] A. Gesell, *Infancy and Human Growth*, The Macmillan Company, 1928, pp. 380–384. Used by permission of the publisher.

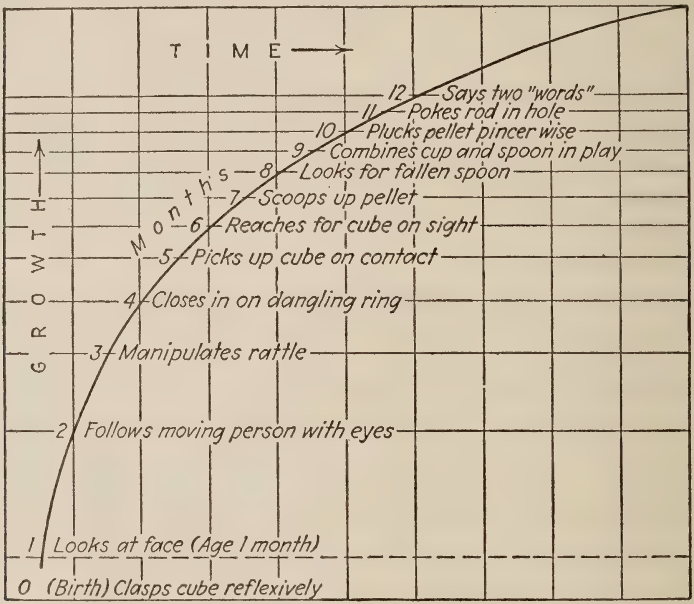

FIG. 2.—A simplified chart of symptoms of development, arranged progressively from birth to the first birthday. (*From A. Gesell, Infancy and Human Growth, The Macmillan Company*, 1928, *p.* 382.)

Bridges[63] has also done some significant work in determining the genetic development of emotions in children. He has shown how originally undifferentiated emotions (except delight and distress) become progressively differentiated and how emotional behavior is modified concurrently with the development of the organism. Charlotte Bühler[64] of Vienna has done important experimental work in the field of child development. Her observations led her to believe that a child's later adjustment will be facilitated if he is permitted to indulge in relatively unrestrained self-assertion at the age of three or four years. This conclusion is in harmony with the earlier beliefs of the eminent pioneer psychologist G. Stanley Hall, that a child's ultimate personality growth would be aided and abetted if he were permitted to develop his egotistical tendencies to the full in childhood. This theory received a severe setback with the introduction of Thorndike's law of effect which is practically diametrically opposed in principle to Hall's idea of "catharsis" in personality development. The whole controversy, however, illustrated Hall's early use of the genetic method. As exponents of the psychological nature of development we could mention also J. B. Watson[65] and Young.[66] McDougall[67] and Bernard[68] have sketched in some detail the sociological aspects of genetic growth.

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[63] K. M. B. BRIDGES, A Genetic Theory of the Emotions, *Pedagogical Seminary*, 37: 514–527, 1930.

Advantages of the Genetic Method.—There are some advantages that might be thought of as being inherent in the genetic methodology; at least the method lends itself nicely to their use. Since they are utilized somewhat extensively in our treatment of the personality problem, they will bear brief mention in this introduction.

1. *The Influence of Constitutional Factors.*—A cardinal principle of the genetic method is involved here. It proposes to base its study first of all on the science of genetics which seeks to learn and describe the nature of heredity influence. For example, it studies an individual's so-called "temperament," partly at least, in the light of his constitutional make-up.

2. *Nature of the Origin of Personality.*—The genetic method presupposes an interest both in the genesis of an organism and in

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[64] C. Bühler, Zur Psychologie des Kleinkindes, *Zeitschrift für Psychologie*, 107: 1–236, 1928.

[65] J. B. Watson, *Psychological Care of Infant and Child*, W. W. Norton & Company, Inc., 1928. Reported originally in M. G. Blanton, The Behavior of the Human Infant during the First Thirty Days of Life, *Psychological Review*, 24: 458–483, 1917.

[66] K. Young, Personality Studies, *American Journal of Sociology*, 32: 953–971, 1927.

[67] W. McDougall, *op. cit.*

[68] L. L. Bernard, *An Introduction to Social Psychology*, Henry Holt & Company, 1926.

the gradual development of personality attributes. In the case of humans, it endeavors to picture the conditions of nurture under which satisfactory personality emerges most naturally. It focuses the light of causation on the child's early development.

3. *The Role of Environment in Personality Development.*—Again the genetic approach takes cognizance of the mesh of experiences that impinge upon the impressionable child from birth up through the years of childhood and youth. It endeavors to show how experiences and combinations of experiences gradually shape the personality for weal or for woe. This might be termed the *vertical* view of personality growth.

4. *The Early Formation of Behavior Patterns.*—As mentioned in a previous paragraph it has been often pre-supposed that the dominant characteristics of an individual were formed in his more mature years when he would supposedly be more amenable to rational influences. This assumption is denied by the genetic thesis in favor of the belief that, in the main, the "style of life" is acquired in the earliest years. Later modifications are, of course, made, but they frequently fail to supersede major "structures" developed in the bosom of the home.

5. *Conditions Conducive to Growth of Favorable Attitudes.*—In view of its interest in the long-time view of personality growth and integration the genetic method seeks to find and guarantee the presence of such stimulating conditions of life as are believed (in the light of present knowledge) to be essential to the acquisition of socially desirable attitudes or dispositions to behave.

6. *The Significance of Broad Experience.*—Suspending one's judgment for the moment in the matter of the nature of "traits," it is probably true that much learning at least is specific. In the light of this situation, it seems fair to say that a comprehensive, many-sided personality will need as its medium of development a broad scope of experience. A plan for such development is presented in later chapters.

7. *Importance of Prevention of Early Personality Disturbances.*—This principle follows from the others as a matter of logic. If early shocks, fears, and prejudices leave a permanent influence on the personality and if adult peculiarities and neurotic tendencies might have had their inceptions in childhood it becomes imperative that psychology focus its interest on early preven-

tion.[69] This is perhaps the major contribution of the genetic method.

Fundamental Principles of Genetic Development.[70]—When one adopts the genetic view in the study of organism development from its genesis through to maturity, he finds that there are a few basic principles that seem to be characteristic of the growth process. These are important to an understanding of personality development and are thus presented here briefly:

1. *All Development Characterized by Continuity.*—Although growth is frequently spoken of in terms of periods or epochs such as "infancy," "childhood," and "adolescence," it is common knowledge now that the process is gradual and continuous. So-called "stages" in development exist on paper only since the process itself does not display marked growth changes or abrupt breaks of any kind. The form of growth curves illustrates this principle.

2. *All Organism Factors Increase with Age.*—As a study of curves for various aspects of growth, such as neuromuscular, physiological, intellectual, and anatomical shows, all factors develop gradually with age up to the point of maturity. However, they do not always grow at the same rate or come to maturity simultaneously. This means that well developed coordinations (muscular and skeletal, for example) are occasionally lost and that relationships between bodily factors are subject to change.

3. *Development is Marked by Orderly Sequences.*—As indicated in Gesell's schedule for child growth, children may vary in their relative rate of development, but the sequence in which various functions appear is practically the same for all children. As the Stanford-Binet test shows, children can draw circles before they can make squares and the latter function precedes the ability to draw diamonds. This principle makes possible the comparison of a given child with the norms for children in general.

4. *Functions Proceed from the General to the Specific.*—As organismic psychology has been emphasizing for years, gross

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[69] J. J. B. Morgan, *Child Psychology*, Farrar & Rinehart, Inc., 1934, pp. 17–22.

[70] Adapted from a list in F. L. Goodenough and J. E. Anderson, *Experimental Child Study*, D. Appleton-Century Company, Inc., 1931, pp. 19–30. Also from one in M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, pp. 85–93.

movements and functions of the total organism are known to precede all more discrete and partial responses. Complete responses are not built up from aggregates of separate parts, but are dynamic wholes in which each part has properties only as it relates to all other parts of the total pattern.[71] To a small child all furry animals are "kitty." Later differentiation will reveal the detailed differences. This principle has important implications for education.

5. *Differentiation Is Accompanied by Integration.*—Goodenough and Anderson write that "parallel with the process of differentiation which is the result of development, there is going on a process of integration or reconstruction of responses which is the result of experience." As the child matures he can respond to more specific and differentiated factors in his environment; with the assimilation of experience he reorganizes these responses into characteristic ways of behaving called "traits." The learning of specific obedience would be a case in point.

6. *In General Development Proceeds at a Constant Pace.*—This means that with respect to any measurable organism function growth maintains a fairly constant relationship with the average for that factor. As Baldwin and Stecher[72] showed us some years ago, short children tend to maintain the same short relationship to average people when they become mature. The same holds for mental age scores. Here we have a fairly reliable law making possible the prediction of some aspects of growth.

7. *Correlation and Not Compensation Is the Rule.*—It has been popularly supposed that a child who is noticeably above average in one phase of development is likely to be correspondingly inferior in another. For example, a pupil who is well developed and capable physically is likely to be regarded by some as necessarily inferior intellectually. While investigations do not reveal negative relationships of this kind popular opinion has assumed them in such expressions as "beautiful but dumb" and "a strong back and a weak mind." Evidence indicates a tendency toward close correspondence among traits or abilities.[73]

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[71] R. H. Wheeler, A Set of Postulates for Educational Theory. I. The Background, *Journal of Educational Research*, 28: 321–322, 1935.

[72] B. T. Baldwin and L. I. Stecher, *University of Iowa Studies in Child Welfare*, vol. 2, no. 1, 1922.

[73] A. I. Gates, *Psychology for Students of Education*, The Macmillan Company, 1930, pp. 584–586.

VII. THEORIES OF PERSONALITY BASES

Psychologists readily admit that their science has by no means charted in a thoroughly objective way the real nature of personality. Definite knowledge concerning its ultimate basis and structure is not yet adequately established. Many illuminating suggestions have been offered but our knowledge is still conflicting and "impressionistic."

Prescientific thinkers long since advanced their a priori views on the original nature of man; pseudo scientists have had their day and have lost no opportunity to spread their phrenological and physiognomic doctrines; advocates of personality based on morphological structure, glandular constitution, and temperamental make-up have expressed their views and findings; behaviorists, gestaltists, and social psychologists have not been hesitant to offer their bases of personality, both objective and assumed; psychoanalysists of all varieties have advanced their analyses and subjective deductions; psychiatrists have enlightened us regarding the mechanics of mental and emotional aberrations; hereditarians have endeavored to explain the constitutional factors responsible for personality characteristics; and finally mental hygienists, who got their views of personality adjustment from a variety of sources—probably mainly from the psychoanalysists—have occupied the limelight of personality study.

The offerings of these groups represent all degrees of soundness and plausibility. In few cases are the conclusions offered entirely trustworthy. Yet all these approaches indicate a keen interest in personality study and strengthen the hope that more and truer knowledge will eventuate in this important field. As May[74] has already pointed out, the personality field represents not only the interest of psychologists and psychiatrists but of neurologists, physiologists, sociologists, and anthropologists. All these sciences meet on this theme in an effort to point out the "foundation stones" of personality.

The following outline will summarize the various groups that have been or are interested in the determination of the bases of personality. Most of them will be treated in some detail in later sections of this volume. They are offered here as an introductory outline.

[74] M. A. May, *op. cit.*, p. 99.

THEORIES OF PERSONALITY BASES[75]

- Prescientific views of personality:
  - The child a miniature adult.
  - Innate sinfulness.
  - Intrinsic goodness.
  - Compromise views.
  - Unfolding instincts.
  - Hereditary traits.
- Pseudoscientific views of personality:
  - Physiognomy.
  - Phrenology.
  - Chirognomy.
  - Graphology.
  - Astrology.
  - Related systems.
- Personality systems resting on physiological bases:
  - The physiology of emotions.
  - Morphological structure.
  - Glandular constitution.
  - Temperamental constitution.
  - Eidetic types.
  - Theories of maturation.
- Personality systems resting on sociological bases:
  - The behaviorist view.
  - The *Gestalt* view.
  - The view of social psychology.
  - The point of view of sociology.
- Personality systems resting on psychiatric bases:
  - Psychoanalytic viewpoints on personality—
    - Freudian interpretations.
    - Adler's "compensation" psychology.
    - Jung's theory of "psychological types."
    - Janet and "hysteria" psychology.
    - Summary of psychoanalytic views.
  - Other conceptions of mental diseases—
    - The physiogenic approach.
    - Hereditary, congenital, and environmental influences.
  - Mental hygiene views—
    - Prevention of delinquency.
    - Programs of child guidance.

QUESTIONS FOR STIMULATING THOUGHT AND DISCUSSION

1. Why are the early so-called "spiritual" or metaphysical conceptions of personality so distasteful to modern "objective" psychologists? In

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[75] Adapted in part from a list given in G. C. Schwesinger, *op. cit.*, p. 354. Used by permission of the publisher.

this connection, what is the practical difference between "subjective" and "objective" views of the nature of the human organism?

2. Contrast popular notions of the meaning of personality with definitions offered by scientific psychologists. What is the difference between regarding personality as an aggregate of personal qualities and viewing it in terms of its "social stimulus value"?
3. What reasons can you give for the tendency of many writers to regard "personality" and "character" as synonymous concepts? From the standpoint of a careful analysis of personality as such, what is the real difference?
4. From the objective, scientific point of view what is the objection to the concept of character as an inner force that acts to regulate conduct? Can your objections be overcome by defining character as a name for the ethical or moral quality of one's collective acts? Explain.
5. What are the weaknesses of the idea that personality is an aggregate or sum of major components called "traits"? If traits are assumed to be unified entities, could personality be thought of as a summation of these? Justify your answer in the light of modern psychological theory and evidence.
6. Compare Morrison's "structures," Briggs' "emotionalized attitudes," Hartshorne and May's "specifics," as well as other such proposals and endeavor to determine their relative validity as components of personality. Can physiological, social, and psychological "needs," as defined, be regarded as major components of personality? Or are they merely supplementary drives to action? Think through and explain the relationship carefully.
7. What is meant by the "relativity" or "biosocial" nature of personality traits? How can the quality of an individual's traits be determined at all if appraisals are always dependent upon the subjective sense of values held by the one doing the rating? What remedy can you suggest for this situation?
8. Evaluate Vernon's criteria for objectifying personality traits and indicate the extent to which they can logically be expected to accomplish such a purpose. Justify his contention that the concept of "general traits," while psychologically involved and treacherous, should, on practical grounds, be retained in personality study.
9. Explain the modern *genetic* approach to the psychology of personality development just as you would before a group of students or members of a parent-teacher association. What are the implications here of the principle of natural causation? Incidentally, be sure to distinguish between the *genetic method of study* and the *science of genetics* as an explanation of biological heredity.
10. In what way can Gesell's work be said to constitute an example of the genetic method? What are the practical advantages to parents, teachers, and others of viewing personality status from such a developmental angle?
11. How must we account for the presence of so many conflicting theories touching on the basis or foundation of personality? What are the

principal psychological objections to the prescientific and pseudoscientific systems as presented at the close of the present chapter?

12. Plan to become well acquainted with personality systems resting on physiological, psychological (including sociological), psychoanalytic, psychiatric, and mental hygiene bases with a view to understanding their several contributions, if any, to our knowledge of human psychology. As you proceed through this volume, do so from the standpoint of a learner who proposes to secure a grasp, first, of the human personality as a primary phenomenon and, second, of the various details and ramifications of this primary personality as they are explained and advanced by conflicting schools of thought.

Recommended Readings

Allport, G. W.: *Personality, A Psychological Interpretation,* New York: Henry Holt & Company, Inc., 1937, Chap. 2.

Allport, G. W., and P. E. Vernon: The Field of Personality, *Psychological Bulletin,* 27: 677–730, 1930.

Briggs, T. H.: *Secondary Education,* New York: The Macmillan Company, 1933, Chaps. 18–21.

Burnham, W. H.: *The Wholesome Personality,* New York: D. Appleton-Century Company, Inc., 1932, Chap. 17.

Gilliland, A. R.: Problems of Personality, *Journal of Abnormal and Social Psychology,* 23: 369–378, 1928.

Hartshorne, H., and M. A. May: *Studies in the Organization of Character,* New York: The Macmillan Company, 1930, Chap. 25.

May, M. A.: The Foundations of Personality, in *Psychology at Work,* P. S. Achilles (Ed.), New York: Whittlesey House, McGraw-Hill Book Company, Inc., 1932, Chap. 4.

Melvin, A. G.: *Building Personality,* New York: John Day Company, Inc., 1934, Chaps. 4, 6, 10, 11, 21.

Morrison, H. C.: *Basic Principles in Education,* Boston: Houghton Mifflin Company, 1934, Chap. 8.

Murphy, G.: *General Psychology,* New York: Harper & Brothers, 1933, Chap. 25.

Roback, A. A.: *The Psychology of Character,* New York: Harcourt, Brace & Company., 1927, Chaps. 9, 25.

Schwesinger, G. C.: *Heredity and Environment,* New York: The Macmillan Company, 1933, pp. 89–102, 355–357.

Stagner, R.: *The Psychology of Personality,* New York: McGraw-Hill Book Company, Inc., 1937, Chaps. 1–4.

Vernon, P. E.: The Biosocial Nature of the Personality Trait, *Psychological Review,* 40: 533–548, 1933.

CHAPTER II

BIOLOGICAL FOUNDATIONS OF PERSONALITY

The student of human psychology is continually confronted with the vexing question of the relative influence of so-called "innate" factors in personality as compared with those acquired through social intercourse. A substantial account of the nature of character and personality must take serious cognizance of this question; it must rest on a sound consideration of the nature of biological heredity as well as that of social inheritance.

Although it is well known to biological scientists that there is really no duality involved in the nature-nurture question—since the two influences have no separate identity, existing in name only—the controversy goes on just the same and must consequently be presented in a nontechnical but nevertheless clarifying way.

I. THE IMPORTANCE OF BIOLOGICAL HEREDITY

Some writers decline to include the physical organism with its various attributes in their conception of the total compounded personality,[1] while others consider it (the organism) as an essential factor in the complete picture.[2] Thus we might reason that even if one believes physical equipment to be the only form of germinal inheritance available to man, a study of the biological basis of heredity is imperative to a comprehensive understanding of human personality. Furthermore, when we consider the significant fact that some biologists and zoologists believe that such personality characteristics as thrift, laziness, dullness, ambition, and even moral qualities[3] are transmitted through the genes, we are forced to take notice and inquiry in some detail into the evidence in the matter.

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[1] H. C. Morrison, *Basic Principles in Education,* Houghton Mifflin Company, 1934, pp. 223–238.

[2] M. A. May, The Foundations of Personality, in *Psychology at Work,* P. S. Achilles (Ed.), Whittlesey House, McGraw-Hill Book Company, Inc., 1932, pp. 81–101.

[3] H. S. Jennings, How Heredity Affects Personality, *The Parents Magazine,* 6: 17, 65, 67, 1931.

Many workers in the social science fields are frankly skeptical of the alleged inheritance of attitudes pertaining to such modifiable and specific fields as conduct and character. They believe that biologically transmitted factors are limited largely to organic structures. Thus, the material in the present chapter is devoted to a careful consideration of the findings and interpretations of scientists who are making contributions in the important field of genetics (biological inheritance).

The Meaning of Heredity.—In popular belief heredity has reference to the "innate" elements with which the child is said to be equipped at birth. These *inherited* factors are thought of as being in direct contrast with learned characteristics which accrue as a result of the individual's experiences in his *environment.* The two are regarded as being mutually exclusive in nature, but as interacting upon each other in such a way as to determine the ultimate personality of the individual. One is said to come directly through germinal transmission and the other by way of the social medium.

This duality of influence has gained wide acceptance among the laity and has been the subject of numerous debates and arguments. The fact that the two influences have never existed as separate and interacting agents is not understood; neither are the patent facts that a child's environment begins to impinge upon him at the moment of conception and that birth is but a passing experience (although momentous) in the life of an organism which has been living and responding to environmental stimuli for a number of months.

Walter[4] speaks of heredity as "organic resemblance based on descent" and suggests that instead of calling a son who resembles his father "a chip off the old block" it would be nearer the truth to say that the two resemble each other because they are "both chips off the same block." This is because the common characteristics are "based on descent from a common source." This writer further likens inheritance to the passing on from father to son of some "valuable patent right or manufacturing plant" by means of which the latter might eventually build up a fortune of his own comparable to that of his parent although not wholly identical with it.

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[4] H. E. Walter, *Genetics,* The Macmillan Company, 1930, pp. 6–7. Quoted by permission of the publisher.

From Conklin's[5] valuable work we get the following conception of the nature of heredity: heredity is "the continuing from generation to generation of certain elements of germinal organization. Heritage is the sum of all those qualities which are determined or caused by this germinal organization." In giving his idea of heredity, Jennings[6] goes straight to the gene principle when he writes, "Experimental biology has shown that at its beginning the organism is a complex thing, containing a great number of *separate substances—what we call the genes.* By the interaction of these thousand substances with each other, with the cytoplasm, with materials brought in from outside, with the forces of the environment—development takes place, the individual is produced with all his later characteristics."

Actually, then, as it now appears from the findings of the science of genetics, heredity cannot be conceived as the equipment that a child brings with him at birth, nor even at any time subsequent to the moment of fertilization of the ovum involved; rather it should be thought of quite exclusively as the potential influences toward future development inherent in any particular group of "genes" up to the point of conception. After that event the influence of the intra-uterine environment begins to play on the growing embryo and there is no possible chance of computing its effects as contrasted with that of the genes themselves. And, except in the case of identical twins (who have similar genes), there is no exact way of observing the relative effects of "gene" inheritance versus "social" inheritance.

The Significance of Inheritance.—Coming back to the popular conception of heredity and environment as contrasted influences, it is obviously of great moment which one receives the major emphasis in a given family or school. The fact that the two axiomatically lose their separate identity after the gene influence becomes amalgamated with the intra-uterine environmental influence is not known to most people; besides, knowledge on this point would not necessarily deter individuals from attaching undue significance to either gene influence or social experience.

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[5] E. G. Conklin, *Heredity and Environment*, 6th ed., Princeton University Press, 1923, p. 135.

[6] H. S. Jennings, Health Progress and Race Progress, Are They Compatible? *Journal of Heredity*, 18: 272, 1927.

Those who elect to place their trust in the superior power of biological heredity in insuring the development of children would, in the nature of the case, do relatively little to surround the child with situations well calculated to guarantee symmetrical personality growth. If they took an active interest in the matter at all, they would naturally do what they could to insure the development of "good stock." Conversely, those who regard the child's environment with its complex of conflicting influences as being of first importance would be less interested in eugenics and would strive to arrange a social order designed to promote the child's development along conduct and character lines.

Over ten years ago, Conklin[7] made it clear that both heredity and environment should be regarded as of the utmost importance in planning a program of child development. As many psychologists and biologists have explained, the bearers of heredity (genes) would in the nature of the case be incapable of producing the potential individual if there were no environmental medium in which to effect their work. By the same token, no environmental setting, no matter how superior, could, in the absence of some agent that is capable of producing life and growth, bring about the development of an individual. Obviously, the two factors must be at hand and become compounded into a single unique source of growth.[8]

As Gray brings out further, the organism of the child does not really have an original nature. All it is at any given point is "what its inherited genes have been able to make it under the control of its environment up to that time." In other words, what we inherit is genes and what the genes manage to accomplish is determined not only by their internal constitution but, to a great extent, by the environmental conditions under which they develop. Furthermore, "no trait, physical or otherwise, is exclusively inherited. Inheritance and environment become amalgamated in organic life and each loses its identity." In this sense nothing is "innate" except the genes and the original constitution of the majority of them can hardly be known in the case of humans since their work is definitely circumscribed by the medium in which they operate.[9] As the facts of genetics clearly indicate, many personality factors, usually ascribed exclusively to biological inheritance, are, to a considerable extent, the result of the influence of the original environment upon the genes.

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[7] E. G. Conklin, *op. cit.*, p. 60.

[8] J. S. Gray, A Biological View of Original Nature, *Educational Administration and Supervision*, 16: 655–657, 1930.

It is apparent, then, that in a critical study of personality and all that such a concept stands for, we must give careful consideration to these significant biological facts. We must not make the mistake of quibbling over the nature-nurture question on the assumption that one influence can be singled out as more important for emphasis in education than the contrasted one. In a general way both may be said to be of equal significance in understanding the nature of possibilities of human development, but in the critical sense it would seem best to study the processes of this unique "amalgamated" factor which is more than an aggregate of heredity and environment and which Gray[10] has, in a later publication, called "herediviron."

Walter[11] presents the problem of heredity somewhat differently when he speaks of it as an aspect of the "triangle of life." To him there is, in addition to heritage and environment, a third factor called "response." On this basis, the individual becomes what he does by virtue of the "interaction" of these *three* influences. Heritage has reference to what he is before birth and what species of individual he will become; environment refers to the surroundings in which the organism develops and responds to stimuli; "response, on the other hand, represents what the individual does with his heritage and environment." Figure 3 makes the relationship clear.

It will be seen that in this scheme heritage, which determines what we *are*, is primary and represents the foundation on which all factors rest. Environment, which indicates what we *have*, and response, which stands for what we *do* about it, are secondary but indispensable to a comprehension of the "triangle of life."

Implications of the Heredity Problem.—It is natural that biologists, working so close to the mechanisms of physical inheritance, should come to the conclusion that gene heredity is a more potent determinant of character and conduct than are environmental influences, and yet some of us in the social sciences are tremendously impressed with the efficacy of such elaborate social institutions as the family, the school, the church, the community, scout organizations, juvenile courts, child-placement bureaus, mental-hygiene clinics, and similar organizations, for the building and rehabilitation of attitudes, dispositions, and behavior tendencies; in short, for character and personality. We are hardly convinced that these institutions are secondary influences only in the formation of personality qualities.

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[9] H. S. Jennings, *The Biological Basis of Human Nature*, W. W. Norton & Company, Inc., 1930, pp. 92–100.

[10] J. S. Gray, *Psychological Foundations of Education*, American Book Company, 1935, p. 67.

[11] H. E. Walter, *op. cit.*, pp. 2–6. Quoted by permission of the publisher.

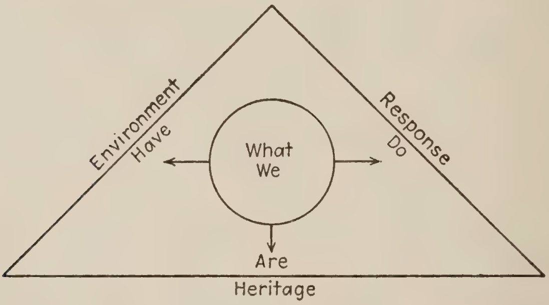

FIG. 3.—The triangle of life. (*From H. E. Walter, Genetics, The Macmillan Company*, 1930, *p.* 4. *Used by permission of the publisher.*)

As already indicated, biologists do not by any means regard germinal inheritance as the only factor responsible for ultimate development. In fact they expressly emphasize that favorable environmental influences represent the only medium in which the genes can make their effects felt. However, in their writings, biologists continually refer to differences in important social and moral qualities as being likely concomitants of differences in *gene* constitution.[12] This may be true, but it can hardly be regarded as an established fact in the normal human species, since no one has yet demonstrated the existence of such a relationship. On the other hand, gene inheritance as indicated by Mendelian and other principles, looms so large as a factor in at least the "organic structure" phase of personality that we must be reasonably well informed concerning it if we hope to appreciate the implications of the concept of personality in the fullest sense. Thus we turn to a study of the mechanics of biological inheritance as represented by the science of genetics.

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[12] H. S. JENNINGS, *How Heredity Affects Personality*, *op. cit.* Also H. E. Walters, *op. cit.*, p. 301.

II. THE SCIENCE OF GENETICS

Except for the important work of Mendel, which unfortunately was lost for nearly half a century following the Civil War, practically nothing was accomplished in the way of unraveling the mysteries of inheritance until approximately the dawn of the present century. Before that time students of the biological sciences had, of course, noticed that various physical characteristics were transmitted from generation to generation and apparently according to some governing principle. There was, however, so much evidence, apparently in direct contradiction to the general principle of "like begets like," that no consistent law or order could be detected in the whole matter of transmission of "traits." Furthermore, little or nothing was known of the intricate mechanisms at work in the germ cells themselves.

With the recovery in 1900 of Mendel's record of his experiments on garden peas, much activity was stimulated in the genetics field. Shortly, a number of investigations yielded results correlating with Mendel's ratios of inheritance. Bateson and Punnett reported four years later, however, observations that failed to coincide with the usual numerical results. As they later realized they had hit upon a principle which is now recognized as "linkage."[13] Since that time, the well-substantiated principle of the gene, as the key to an explanation of the observed facts of heredity, has been added to our storehouse of invaluable knowledge.

Chromosomes as the Bearers of Heredity.—It has long been obvious that the only possible avenue of transmission from parent to offspring—heredity—must be through the germ cell. This minute bit of protoplasm must be the possessor of whatever factors or mechanisms are responsible for the transmission of physical characteristics from generation to generation. When subjected to careful study under the microscope, these tiny cells reveal the presence of a rather complicated nucleus composed of strandlike particles resembling an irregular string of beads. It was noticed also that in contrast to the surrounding material

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[13] T. H. Morgan, *The Theory of the Gene*, Yale University Press, 1926, p. 10.

(called "cytoplasm") this nucleus became more conspicuous when stained with dyes. Because of this these fine elongated threadlike substances were called "chromosomes."

Further study showed conclusively that a definite number of these chromosomes are present in any given species and that the number involved varies greatly among species. In the case of humans, the number is known to be 24 pairs or 48 chromosomes, half of which are received from the male parent and half from the female.

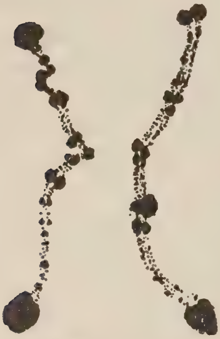

FIG. 4.—Chromosomes in elongated threadlike form showing genes arranged in linear order. (*From A. F. Shull, Heredity, McGraw Hill Book Company, Inc.*, 1926, *p.* 19.)

It is these minute cells that control the ratios of inheritance. The evidence seems to be conclusive that they (chromosomes) are "the bearers of heredity" in the sense that in them is carried the potential future structures and to some extent the mental ability of the subsequent individual. As Jennings[14] says, "*the 'laws of inheritance' are essentially the rules of distribution of the chromosomes.*" Since, however, each chromosome "thread" is composed of numerous infinitesimal units called "genes," it is more proper as Gilliland[15] suggests, to regard the latter as the real basis of inheritance. As will be shown later, combinations of these genes are responsible for the transmission of all "unit characters" (physical traits).

Evidence of Chromosomal Inheritance.—As positive evidence of the principle that certain physical characteristics in offspring follow unerringly upon the presence or absence of given chromosomes, we have the extensive researches of Morgan[16] and his associates on the common fruit fly (Drosophila). After discovering that the female germ cell contained an even number of chromosomes while the male cell had an uneven number (one less), they were able to trace from generation to generation the characteristic or characteristics produced by the extra chromosome.

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[14] H. S. JENNINGS, *op. cit.*, pp. 64–65.

[15] A. R. GILLILAND, *Genetic Psychology*, Ronald Press Company, 1933, p. 101.

[16] T. H. MORGAN, C. B. BRIDGES, and A. H. STURTEVANT, The Genetics of Drosophila, *Bibliographia Genetica*, 2: 1–262, 1925.

The latter, which was named the "X chromosome," turned out to be the sex determiner. When a sperm carrying an X chromosome (males carry sperm with and without the X) fertilizes an ovum (which always carries an X) the resulting individual is always a female. When a sperm carrying no X unites with an ovum, the subsequent individual is always a male. It was found also that genes for the determination of other characteristics such as eye color and form were linked in the same chromosome with the X or sex determiner. All this proves the localization of the physical "bearers of heredity" in the chromosomes. Furthermore, this chromosome influence furnishes the appropriate mechanism for the explanation of Mendelian inheritance.

The Process of Maturation of Chromosomes.—A study of the behavior of chromosomes in the various processes of cell division furnishes the key to an understanding of the obvious differences among children of common ancestors. These processes also indicate how the correct number of chromosomes peculiar to the species is preserved in mating. During prenatal existence, when new germ cells are being formed, all cell splitting results in the equal division of the chromosomes, half from the mother and half from the father. This process is called "mitosis" and is concerned with the production of an adequate supply of germ cells for future reproduction.

However, before an individual reaches physiological maturity (puberty), a cell-splitting process of a different sort takes place. During this process of germ-cell *maturation*, the paternal and maternal chromosomes (half originally come from each) become arranged in 24 pairs, after which they again divide, but this time in a much more complicated way than during mitosis. It seems that now half the total number, or 24, go each their way to separate cells, but in a chance combination—not half paternal and half maternal. This reduction of the number of chromosomes is apparently in preparation for mating when a union of the sperm and ovum will give the new individual the requisite number for his species—48.

When we consider the significant fact that in this final splitting process a given germ cell may by chance receive any conceivable combination of maternal and paternal chromosomes, we begin to realize the enormous number of combinations of chromosome equipment that can be transmitted by any union where both parties obviously possess literally hundreds of thousands of unique germ cells. And since the chromosomes (with their genes) are the carriers of hereditary characteristics it is to be expected that offspring of common ancestors will often exhibit marked individual differences.

The Principle of the Gene.—It is now generally recognized that the genes (chromosome subdivisions) are the real irreducible units of inheritance. All physical traits are apparently inherited through combinations of genes. This is why we speak of true biological inheritance, which is often confused with an amalgamation of environment and so-called "innate" factors or with congenital transmission, as specifically *gene-inheritance.* We know that many important aspects of physique are the result of the way in which the genes are arranged in the germ cell as well as of the potentialities for development which are inherent within them. "The way diverse individuals develop, the peculiarities that they show, the so-called laws of heredity, the extraordinary resemblances and differences between parents and offspring—all these things depend largely on the arrangement and behavior of the genes."[17] Thus it appears that what a person ultimately becomes depends to a great extent upon the set of genes with which he started. Just as the character of a chemical solution depends upon the substances of which it is composed, so human characteristics depend upon the genes that cooperated in their formation.[18] This fundamental principle is of momentous importance for an understanding of the nature of personality.

The Genetic System in Inheritance.—Another fact of considerable significance for an insight into the apparent "paradoxes" of biological inheritance is the knowledge that each parent gives the offspring a set of 24 chromosomes, each set complete in itself, and each with strings of localized genes.[19] Since the human individual always has two parents, he obviously receives two sets of chromosomes and as it works out these become arranged in pairs in which genes for similar functions are in a paired position. We therefore get a double set of genes (paired), each of which contains all the ingredients necessary to the production of a complete individual.

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[17] H. S. Jennings, *op. cit.*, p. 3.

[18] W. Rand, M. E. Sweeny, and E. L. Vincent, *Growth and Development of the Young Child*, W. B. Saunders Company, 1930, p. 85.

[19] H. S. Jennings, *op. cit.*, pp. 1–11.

This result is schematically represented in Fig. 5.

The implications of this dual inheritance for ultimate personality are significant indeed. Since each pair of genes is concerned with the same function and since either is capable of performing the function in question independently, it follows that, if one gene is defective or otherwise inadequate in its work, its mate can perform the entire function, thus insuring the appearance of a normal structure as far as the trait involved is concerned. If, for example, a gene or combination of genes (given characteristics are known to be dependent often upon many genes) from the mother tends to give rise to defective brain structure, its mate from the father's side may be potential for an excellent brain thus producing a situation in which the dominant genes will determine the outcome. If, as biologists hold, the desirable genes are usually dominant over the defective ones it is entirely possible that in this case the brain received would be wholly normal or even superior. This principle holds for color of eyes, skin, hair, and many other physical attributes. In short, it is not necessarily a matter of cooperation between the paired genes; it is rather a case of the superior one transcending the other by doing its work well in spite of competition. As Jennings comments, "It appears that this insurance through doubling of the genes is the chief biological ground for our having two parents instead of one. Gene defects are so common that without this doubling—the two genes of each pair coming each from a different source—defective individuals would be far more common than they are. Organisms reproducing from two parents have a great advantage in this respect over those reproducing from a single parent" (page 9).

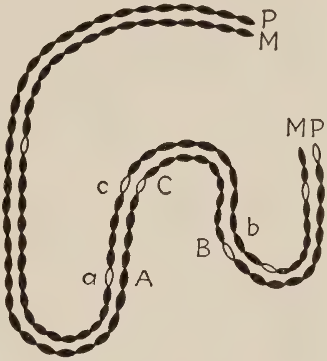

Fig. 5.—Diagram to illustrate the arrangement and action of the genes in the genetic system. The genes, represented by the spindle-shaped bodies, arranged in consecutive order, in long paired strings, the chromosomes. One string (*P*) of the pair comes from the father, the other (*M*) from the mother. Thus the genes themselves are in pairs, one member of each pair from the father, one from the mother. The genes shown in white are to be conceived as defective genes. (*From H. S. Jennings, The Biological Basis of Human Nature, W. W. Norton & Company, Inc.*, 1930, *p.* 4.)

Operations of the Genetic System.—From the principle of paired genes, which incidentally are known to reside in the chromosomes in regular linear order,[20] we can readily discern the basis upon which the mechanisms of inheritance operate. Defective inheritance in respect to any given characteristic turns out to be the result of the chance pairing of defective genes from both parents. This may be true even though one or both of the parents are themselves normal in every respect. The reason for this possible situation lies in the fact that individuals who are themselves normal may and frequently do carry in their organisms defective genes. It is interesting to observe how these mechanisms work out to produce marked and, to the uninitiated, unexpected differences between parents and their children. We shall take a few examples from Jennings's[21] more detailed account.

If one parent has in his make-up two defective genes (feeble-mindedness, for instance) in one of his pairs, he is in the nature of the case feeble-minded himself. The other parent may have a normal pair of the genes in question and thus be free from the undesirable feeble-mindedness. In mating, each parent transmits one gene of his and her pair to the child, and, since the child gets one normal and one defective gene in the pair resulting, it will be normal. This is again because of the dominant nature of the desirable gene which performs unaided (by the paired gene) the entire function of producing a normal brain structure. In common parlance, this is called "taking after" one of the parents.

It is evident further that if one of the parents has two defective genes in a pair and is himself defective (as before), while the other parent has but one defective gene in his corresponding pair, some of the offspring of this union may by chance get a defective gene from both parents and thus be defective themselves. On the other hand, other children of the same parents may inherit only one defective gene (from the parent with both in the pair defective) and thus be normal. The relationship involved may be discerned clearly in Fig. 6.

We could go on and on showing by the use of the same principle how some children might show characteristics not present in either of their parents. They might easily be superior to both parents or, more unfortunately, decidedly inferior to them. Morgan[22] has shown how this process goes on generation after generation in the case of the Drosophila (fruit fly).

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[20] T. H. Morgan, *op. cit.*, p. 19.

[21] H. S. Jennings, *op. cit.*, pp. 11–34.

It should not be supposed that in these processes each characteristic of an individual is necessarily the aftermath of the work of one single gene. It is a matter of definite knowledge that in the production of one characteristic or attribute of the individual many genes interact. In the case of the much-studied fruit fly, at least 50 pairs of genes cooperate in the development of the normal red eye color. On the other hand, one gene may make its influence felt in the formation of more than one "trait."

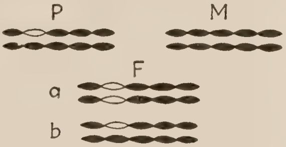

FIG. 6.—Diagram of the results in heredity in cases where one parent (*P*) has two defective genes (white) in a certain pair, the other parent (*M*) one defective gene in that pair. Some of the children (*F*) receive two defective genes in that pair (*a*) and are therefore personally defective; others receive only one (*b*), so that such are not personally defective. (*From H. S. Jennings, The Biological Basis of Human Nature, W. W. Norton & Company, Inc.*, 1930, *p.* 13.)

Interpretations of Genetic Action.—These principles of gene action furnish us with the requisite clue to an understanding of the physical likenesses and differences which we observe between parents and offspring. They explain the appearance of both superior and defective children in most unexpected quarters. They provide a basis for prediction in the case of some of the most thoroughly investigated species but not in the case of humans, since there is no available way to study their genes directly.

We are constrained to conclude that, as for the strictly organic and structural foundations of personality, the avenue of inheritance is by way of the behavior of the genes. In the case of what we commonly call "intellectual ability," the same interpretation of inheritance is in order if we think of mental ability as being a concomitant of qualitatively and quantitatively adequate nervous structure. To those who are not inclined to postulate a strictly physiological background for the emergence of intelligence, the gene-inheritance explanation is not at all logical except in the instance of definite structural pathology. They are inclined to agree with Witty and Lehman[23] who, after summarizing the evidence for inheritance, declare that the hypothesis favoring the belief that "mental abilities are transmitted in much the same manner as physical traits" is very "doubtful" indeed, in fact it is based on a priori considerations. They are more likely to think in terms of learning accretions attributable to favorable opportunities rather than to relatively more adequate inherited brain structure. As for personality qualities touching on character and conduct, some feel that it is entirely gratuitous to attribute them to gene influence at all. They could just as logically be assigned to the modifying effects of patterns of experience enveloped in the social medium. Besides, it has by no means been shown that, in the case of humans, known changes in the constitution and arrangement of genes are followed by corresponding changes in character and personality "traits" of a social nature.

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[22] T. H. MORGAN, C. B. BRIDGES, and A. H. STURTEVANT, *Ibid.*

[23] P. A. WITTY and H. C. LEHMAN, The Dogma and Biology of Human Inheritance, *American Journal of Sociology*, 35: 548–563, 1930.

III. MENDELIAN LAWS OF INHERITANCE

Before our present knowledge of chromosome behavior and gene-inheritance was available, considerable was known about ratios of inheritance among plants and small animals where pure stocks could be ferreted out by experimental means. As nearly everyone knows the author of the original laws of inheritance was the Austrian monk, Mendel. He was not acquainted with the mechanisms of germinal transmission as we know them now, but he did discover important principles of reproduction which needed for their explanation just the fundamental biological mechanics which the gene principle furnishes us. Putting the Mendelian laws with the more recently disclosed chromosome-gene mechanism of inheritance, we have a fairly adequate picture of the elaborate processes of physical heredity. A brief account of Mendel's work and contributions will make this clear.

Mendel's Pioneer Experiments.—It is singular that the foundation stones of the modern science of genetics should be first discovered by a man not engaged primarily in biological work. Gregor Johann Mendel (1822–1884) was a monk and later the Abbot of Königskloster, an Austrian monastery in Brunn. He lived contemporaneously with Charles Darwin, but both he and his contributions were entirely eclipsed by the latter's widely heralded postulations regarding the "selection of species."

In fact, Mendel's findings were not disclosed to the waiting world until 1900 when discovery was made of a paper touching on his experiments published in 1866 by Mendel's teacher Karl Nageli in the *Transactions of the Natural History Society of Brunn.* In the meantime, a number of scientists in various European countries and in America had made somewhat similar discoveries. The priority of Mendel's contribution is, however, well recognized. Bateson[24] has said of him, "untroubled by any itch to make potatoes larger or bread cheaper, he set himself in the quiet of a cloister garden to find out the laws of hybridity, and so struck a mine of truth, inexhaustible in brilliancy and profit."

Mendel noticed marked differences in the various characteristics of the sweet peas in his garden. Being of an inquiring mind and gifted with the ability to discern possibilities of discovery through experimentation, Mendel set out to artificially hybridize certain varieties of garden peas. With characteristic intelligence, he proceeded to watch the results of many generations of reproduction and to record the exact nature of the progeny. In the end, the scientific world was the recipient of at least three fundamental principles of physical inheritance. In this connection, it should not be overlooked that, unlike other investigators who took as their basic unit of study the whole individual (animal or plant), Mendel confined himself to a single characteristic, such as tallness or shortness, colored or white flowers, and the like. This approach enabled him to discover not only the ratios of "dominant and recessive" transmission but the fact of the independence of "unit characters" as well.

The Law of Segregation.—In summarizing Mendel's epoch-making work it may be said that he gave us three main principles all of which are more or less interrelated. These have been called, (1) "the law of segregation," (2) "dominant and recessive traits," and (3) "the law of independent unit characters." The first law is well illustrated by Mendel's experiments with his garden peas. In order to cross his tall- and short-vine peas by artificial fertilization, he removed their stamins (to prevent self-fertilization) and placed the pollen of one variety on the stigma of the opposite kind. The results he obtained are quite well known and are illustrated in Fig. 7.

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[24] Quoted in H. E. WALTER, *op, cit.*, p. 95. Used by permission of the publisher.

In the diagram, it will be seen that in the first generation of progeny ($F1$) all the peas were tall, and that the second generation ($F2$) produced a ratio of three tall peas to one short one. In the third generation ($F3$), the short peas bred true by producing all short peas while a third of the tall ones similarly produced all tall peas; however, the other two-thirds of the tall plants gave rise to peas in the ratio of three tall to one short (3:1). These ratios were continued indefinitely. They have been reenacted since with pure stocks in the animal world (black and white guinea pigs).

The explanation of this in terms of genes is, of course, that one reproductive cell can only contain one of the two alternative tall and short characteristics. If two germ cells, each containing the gene (or genes) for shortness, unite, the resulting vine will be short, but if a cell containing genes for tallness unites with one potential for shortness the subsequent offspring will be tall due to the *dominance* of tallness over shortness (in peas).

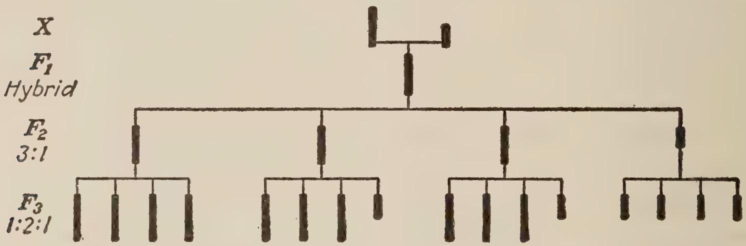

FIG. 7.—The "family tree" resulting from the crossing of tall and short varieties of peas. Tallness is dominant and is indicated by the longer lines. (*From W. C. Trow, Educational Psychology, Houghton Mifflin Company,* 1931, *p.* 410.)

Dominant and Recessive Traits.—Mendel's second law, the principle of *dominant and recessive traits,* is a statement of the experimentally discovered fact that some traits or characteristics are consistently *dominant* while others are *recessive* or impotent when paired in the genes with the dominant factor. Fortunately, it has been found that desirable qualities are usually dominant.[25] For example, the structural basis for normal mentality is dominant over conditions producing feeble-mindedness. Some conditions, such as harelip and cleft palate, have, however, been shown to be Mendelian dominants.[26] Table 1 provides a general idea of the known dominant and recessive characters.

[25] H. S. JENNINGS, *op. cit.*, p. 10.

[26] W. RAND, M. E. SWEENY, and E. L. VINCENT, *op. cit.*, p. 111.

TABLE 1.—MENDELIAN INHERITANCE IN MAN[27]

Characters	Dominant	Recessive
	Normal Characters	
Hair	Curly; dark	Straight; light to red
Eyes	Brown	Blue
Skin	Dark; normal	Light; albinism
Face	Hapsburg type (thick lower and prominent chin)	Normal
	Abnormal and Pathological Characters	
Size	Dwarfs with normal bodies and short limbs	Normal
	Normal	Dwarfs with normal body proportions
Fingers and toes	Short; webbed; extra number	Normal
Skin	Thick; hairlessness	Normal
Nervous system	Normal	Hereditary epilepsy; feeble-mindedness; insanity; hysteria
Eyes	Hereditary cataract, glaucoma	Normal
Ears	Normal	Hardness of hearing due to thick tympanum
	Sex-linked Characters	
	Normal	Slow clotting of blood Red-green color-blindness Hereditary night-blindness

Independence of Unit Characters.—Mendel's third law, that of the *independence of unit characters*, is a statement of the well established principle that given unit characters within a species are frequently relatively independent of other characters in the same species. It was found, for example, that even though colored flowers may have been identified originally with tall pea vines, by a process of cross-fertilization it was perfectly possible to produce them on short vines. The ratios of inheritance invariably followed the same numerical combinations as those found in the tall-short cross; namely, 3:1 in the second generation and 1:2:1 in the third (one true tall, two hybrids, one true short). This compound principle of unit character independence and the dominance of certain of the unit characters operates throughout nature where pure stocks or individuals of known ancestry are involved. Morgan[28] illustrates this by reference to the inheritance of eye color in man: "Blue eyes mated to blue gives only blues; brown eyes bred to brown give only brown, provided the browns have had only brown ancestry. If a blue mates with a pure brown, the children are brown. If two individuals that have arisen from such a parentage marry, their children will be brown- and blue-eyed in the ratio of 3 to 1."

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[27] W. C. TROW, *Educational Psychology*, Houghton Mifflin Company, 1931, p. 413. Adapted from E. G. Conklin, *Heredity and Environment*, Princeton University Press, 1923, pp. 291–296.

Genetic Principles Based on Mendel's Laws.—Since Mendel's day the laws which he so successfully detected have been greatly amplified in detail and have been applied experimentally to species in the animal world and to some extent in the human realm. Several important new principles associated with the general problem of biological inheritance have also been experimentally verified. These have greatly enriched our comprehension of the common phenomena of parent-child resemblances and dissimilarities. Although they are based largely on Mendel's original findings, they cannot be fully comprehended without a thorough grasp of the nature of gene behavior and of the implications of dual gene inheritance as set forth briefly in a preceding section of this chapter.

The Concept of Unit Characters.—The concept of "unit characters" has already been mentioned in connection with one of Mendel's laws but is so involved as to require further illumination. First, it should be realized that even before Mendel's long-neglected contribution was finally announced by DeVries as rediscovered, the belief was current among such prominent nineteenth century scientists as Darwin, Weismann, and DeVries himself that the resemblance of children to their parents was due to minute particles, called by various names such as "pangens," "ids," and "idants,"[29] which "moved in military formation through individuals into germ cells . . . causing each part (of the resulting embryo) to produce its characteristic structures."

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[28] T. H. Morgan, *op. cit.*, p. 4.

[29] H. S. Jennings, *op. cit.*, p. 189.

With the coming to light of Mendel's experimental findings the idea of specific germ cell particles as generators of specific characteristics in offspring seemed to be confirmed. It appeared that the unit characters were distributed according to a certain mathematical principle since some (shortness of pea vines, for example) disappeared in the first generation but reappeared in certain ratios in subsequent generations (see Fig. 7).

Subsequently, the genes, as the particles came to be called, were isolated and detected under the microscope. It came to be known, for instance, just where in a given chromosome the genes for white eyedness in Drosophila were located. All this naturally led to the conviction on the part of some that all characteristics, physical, mental, and moral, are transmitted unequivocally by the unfolding of the determiners of heredity—the genes. Little account was taken by many of the now obvious fact that even organic structures, not to mention social characteristics, are powerfully influenced by the responses which the environment elicits from them. As might be expected the naïve doctrine arose that all human ills and social inequalities are due directly to the predetermined influences of the germ cells and that nothing can be done about them except to enter upon a program of selective human breeding for the ultimate production of better stocks. The social implications of the latter idea among morally cultured groups is almost too patent to be mentioned. In the first place, there are no pure human stocks (at least with reference to "traits") with which to experiment, and secondly, controlled experiments of a sexual breeding nature would not be tolerated in a civilized society controlled by high ethical mores and religious principles.

The Relation between Genes and Unit Characters.—Incidentally, in addition to our substantial knowledge that the development of all conceivable human "traits" and characteristics is dependent upon the environment working in "organismic" relation to the bearers of heredity—the genes, we now realize that the older notion of one gene for one unit character is no longer tenable. Morgan and a number of others have found from extensive experimentation that every characteristic depends for its development not only upon favorable surroundings but upon the interaction of many genes located in a variety of places in the linear arrangement of a chromosome (or chromosomes). This finding is known as "the *factor hypothesis* of heredity."[30] It includes the previously mentioned fact that one single gene may also lend its influence to the development of a number of different unit characters.

The idea that biological inheritance is a closed system in which a given unit character, such as color of eye, shape of nose, or degree of intelligence, is the inevitable result of the action of one certain and noninfluenceable gene, regardless of the possible effects of its environment or of neighboring genes' influence, turns out to be a fallacy. Of course, the absence of one pair of the total number of requisite interacting genes for eye color, for instance, may prevent the appearance of color that would otherwise be in evidence, but one gene standing alone cannot give rise to even a physical characteristic. When we get into the realm of morals, character, and personality, there is no logical room for fatalistic views of inheritance since no known gene-pattern—character-trait relationships exist directly. And it is not plausible that they should obtain when we consider the profound modifications of behavior and points of view that are known to be influenced by environmental pressures.

The Blending Process.—Geneticists have been greatly puzzled over the incidents in which the principle of dominant and recessive inheritance has failed to work out. In other words, the progeny of unlike individuals have sometimes begotten characteristics intermediate between those of their parents. Thus, long-eared rabbits in mating with those possessing short ears have produced offspring with medium length ears. Furthermore, unlike some other instances of breeding, these intermediates subsequently breed very nearly true to their own characteristics; segregation does not appear in the succeeding generations as usual.[31]

Similarly we find a blending of color (hybrids) when black and white humans are crossed. These mulattoes tend to beget in turn mulattoes of a color intermediate between their own.

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[30] H. E. Walter, *op. cit.*, pp. 145–146. Quoted by permission of the publisher.

[31] W. E. Castle, and others, Studies of Inheritance in Rabbits, *Carnegie Institution Publications*, no. 114, 1909.

Davenport and Danielson[32] have studied this question with great care in an effort to discern the relation between these results and the regular Mendelian law of segregation. With them it was a matter of whether there are various laws of inheritance or whether this is a case of Mendelian inheritance obscured by mitigating factors. Results of analytical study indicate that pure blacks probably carry two pairs of identical genes for black pigmentation (AABB) which in inheritance have cumulative influence. Since pure whites would carry no genes for black pigmentation (aabb), a cross would bring about a situation (AaBb) in which the offspring received just half the amount of pigment carried by both parents combined.

Walter[33] thinks that blending is thus just an instance of Mendelian segregation in which "two or more similar genes, duplicate or cumulative, are concerned."

The Phenomenon of Linkage.—A few years after Mendel's laws were found and applied to experimental procedures, it was found that, although characters usually appeared in the 3:1 ratio characteristic of the segregation of independent units (dominant and recessive), in some instances combinations of characters that went into a cross together remained together in later generations instead of following any ratio of assortment. As Morgan[34] found in experimenting with the vinegar fly, "there are limits to the subdivision of the germinal material." This phenomenon is known as "linkage" and means that where several characteristics are connected with the same chromosome all progeny who later receive it (the chromosome) get all the original characteristics associated with that particular chromosome. This is indicated by the fact that if a grandparent possessing several characteristics coming from a variety of genes residing in a single chromosome (color of hair, texture of hair, or color of eyes) transmits this chromosome to child and grandchild, not one or part of the characteristics in question appear, but usually all appear. All of the characteristics that depend on the pattern of genes in a single chromosome are said to constitute a "linkage group." As a rule, there is a linkage group for each *pair* of chromosomes.

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[32] C. B. Davenport and F. H. Danielson, Heredity of Skin Color in Negro and White Crosses, *Carnegie Institution Publications*, no. 188, 1913.

[33] H. E. Walter, *op. cit.*, p. 187. Quoted by permission of the publisher.

[34] T. H. Morgan, *op. cit.*, pp. 10–11.

A number of physical traits are known to be linked with sex since it can be shown that they are associated with genes residing in the X chromosome—the sex-determinant chromosome. For instance, "bleeders" (hemophilia) are always males just as color-blindness is usually identified with the male sex. Since these are sex linked they always come from the mother who is only a carrier of the defective genes, being herself free from the taint. A complete list of sex-linked recessives transmitted from mother to son include "muscular atrophy, hemophilia, atrophy of the optic nerve, color blindness, multiple sclerosis, and certain forms of myopia and nystoagmus."[35]

In cases where linkage is not complete, geneticists have attempted to solve the problem theoretically by "assuming that the chromosomes sometimes knot up and the parts cross over in the maturation process. If, for example, color of hair and color of eyes are usually linked, in some cases there might be a crossing over so that color of hair might come from one chromosome and color of eyes from another."[36]

Significance of the Laws of Genetics.—While it is true that the genetic contributions of Mendel and those of twentieth century scientists as well were based largely on experiments with plants and small animals, it is clear that the results go a long way toward illuminating what we see in human stocks. Pronounced likenesses and differences among those close of kin are comprehensible in the light of the principle of the gene. We understand the phenomena of inheritance as it operates to produce eye color, hair color and textures, height, weight, contour of face, color of skin, and numerous other physical traits, not to mention the appearance of such defects as harelip, cleft palate, and clubfeet. We can also explain why children of inferior parents are occasionally decidedly superior and why a seriously defective child, such as a Mongolian idiot, may unfortunately crop out in a family of the highest caliber.

If in possession of the outlines of genetic knowledge, we can understand why mulattoes are midway between their parents in skin color, why children are often shorter than one parent and taller than the other, and why some characteristics such as color blindness and hemophilia are definitely associated with the male sex. We have the clue to just why a grandchild may frequently resemble a grandparent much more than it does either of its parents, also why inbreeding represents serious biological dangers outweighing its advantages.

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[35] W. Rand, M. E. Sweeny, and E. L. Vincent, *op. cit.*, p. 112. Courtesy of the W. B. Saunders Company.

[36] A. R. Gilliland, *op. cit.*, p. 109.

It is clear, too, that we could make quite accurate predictions regarding the physical characteristics of expected offspring if we knew the constitution of the gene patterns in their parents. This is just about impossible in the case of man since, even if ethical considerations could be overcome, humans are slow in breeding and usually confine themselves to few offspring. The technique of ferreting out known ancestry of traits would be practically a hopeless task. Besides, as will be developed later, it is very doubtful whether such a procedure would eventuate in any particular advantages to the race. In the meantime, we can only make general predictions but these are often extremely valuable, especially in the case of known physical taints.

If it is difficult to predict and control the appearance of strictly physical characteristics such as are known to follow the ratios of gene action, how much more complex and elusive is the inheritance problem in the mental and moral realms! Only a modicum of caution would lead one to be modest in his pronouncements and not given to the propaganda spirit. When we consider the powerful influences of the social environment as they play on the organic and social natures of the individual, it is not so difficult to comprehend the general social scene with all its crime, delinquency, poverty, and abuse, without dragging into the moral picture either chromosomes or genes. Rather, one looks for the byplay of cause and effect as they operate in the environmental medium to produce organism "sets" of all kinds and the many accretions of learning which go to make up the personality.

The study of personality has much to gain by a comprehensive understanding, not only of what factors biological processes provide as its physical undergirding, but also by an appreciation of what moral and social "traits" they probably do *not* equip us with through mechanical ratios of inheritance.

IV. THE PROCESS OF REPRODUCTION

Now that we have canvassed some of the principal features of the Mendelian laws of physical inheritance it would seem logical to consider another important aspect of the biological picture of the foundations of human nature. The processes of reproduction and development have much to contribute to a thorough understanding of the problems of human personality. This is especially true of our knowledge concerning the dynamic relationship obtaining among embryonic cells during the early stages of development. The implications for physical inheritance of this knowledge are little understood and are, unfortunately, seldom presented except in technical works on biology and related sciences. The broad outlines of this interesting phenomenon are treated here in connection with the usual story of sexual reproduction.

Preparation of the Ovum for Fertilization.—The conception of a new human individual begins at the moment of a successful union between a mature ovum, or female germ cell (egg), and its complementary germ cell, the male sperm. But it is not so well understood that before this significant event can be satisfactorily accomplished the ovum must have undergone a preliminary process of preparation during which the essential groundwork for forming the plan of a new individual is laid down.

While the nucleus or chromosome equipment of the germ cell is probably its principal feature, it must be realized that the protoplasmic mass, called cytoplasm, surrounding this nucleus is also of considerable importance in the development of subsequent bodily structures. It is obvious that since many diverse organs and tissues ultimately develop from multitudinous cells of identical chromosome equipment, there must be some determining or differentiating principle in the cytoplasm itself. The importance of the cytoplasmic mass will be realized when we consider the known fact that diversified body parts are made possible only through a vigorous process of interaction between this material and the genes. Incidentally, most of it (cytoplasm) comes from the mother since the sperm of the male is far too minute to include much more than the nucleus of chromosomes.

During the maturation process of the ovum, there is a point at which the chromosomes are known to become amplified in size by taking in material from the cytoplasm. Later, they expell this substance in altered form (chemically) into the cytoplasm thus changing its constitution. This process of interaction prepares the cytoplasm to perform adequately its part in the later formation of body structures.[37]

At its last stage of development, the potential ovum becomes more active than ever. Its nucleus diffuses a certain substance which greatly enlarges the other cell material and is in turn enlarged by the reciprocal effect of the reaction produced. Ultimately the membrane surrounding the central core or nucleus dissolves and gives off new properties to the cytoplasm which are all important in guaranteeing complete organic growth later on. In some species (sea urchin), there is established in each mature ovum several zones[38] which "form the foundation plan for the new individual." It is known that the surgical removal of one of these zones is accompanied by a concomitant failure of certain parts of the physical structure to develop.

The Process of Fertilization.—All the intricate forms of behavior of the female germ cell (ovum) just described occur before the mating event which inaugurates the process called *fertilization.* They prepare it for the even more startling process associated with the gradual development of the embryo.

As shown in Fig. 8, fertilization takes place when a sperm from the male, which is relatively very small, is released in the vicinity of an ovum (actually many ova) and is successful in penetrating to the interior of the latter. From this point on, a very orderly and extremely intricate process of cell multiplication gets under way. This process of cell division, called "mitosis," has actually been observed under the microscope in the case of some of the smaller animals such as the Ascaris. It is believed that approximately the same series of events occurs when the human germ cell is fertilized.

As the initial act in mitosis, the small sperm approaches the center of the mature ovum and proceeds to become enlarged as it passes between the two centrosomes which divided at its approach. The two separate chromosome groups next come into a position of contact and arrange themselves on a straight plane at the "equator" of the egg cell (end of prophase). In the next stage (metaphase), the chromosomes split lengthwise and gravitate toward opposite poles in the wake of their respective centrosomes with which they are connected with fine fibers

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[37] H. S. Jennings, *op. cit.*, p. 80.

[38] *Ibid.* p. 81.

(see Fig. 8). Following this, the cell lengthens and begins to divide, each equal half-chromosome group going to its own separate cell (anaphase). Finally, each half-chromosome group grows to full size and becomes the full-fleged nucleus for its own cell, which is now completely developed (telophase). Incidentally, the nuclear membrane, characteristic of mature cells, forms around the chromosomes which themselves take on their final network arrangement.[39]

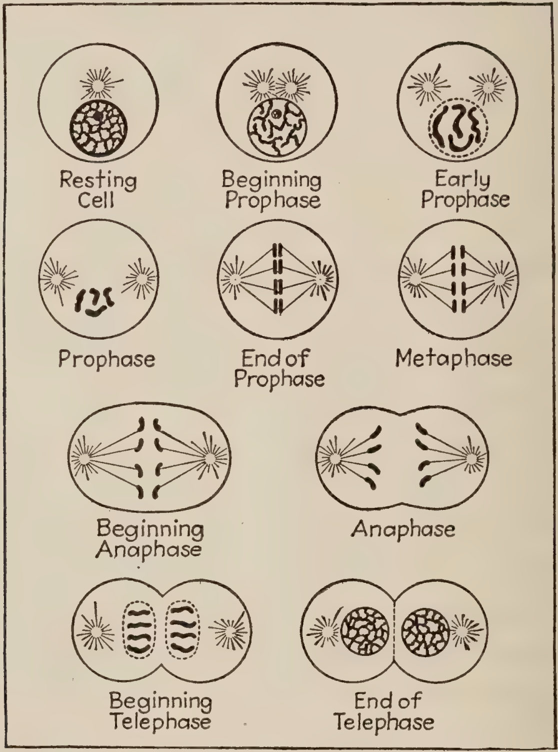
Resting Cell
Beginning Prophase
Early Prophase
Prophase
End of Prophase
Metaphase
Beginning Anaphase
Anaphase
Beginning Telephase
End of Telephase

FIG. 8.—Diagram illustrating mitosis. (*From H. E. Walter, Genetics, The Macmillan Company,* 1930, *p.* 213.)

The mitotic process described goes on endlessly resulting in systematic growth and orderly differentiation of structures. The multiplying cells first form a solid sphere, later assuming the shape of a hollow sphere (blastula). Gradually, however, specialized organs and structures take shape, and in a remarkably short period of time the fetus is recognizable as belonging to its own species.

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[39] Described in detail in M. F. GUYER, *Animal Biology*, Harper & Brothers, 1931, pp. 410–415.

In connection with all this, it is important to remember that when the ovum and sperm unite the new cell contains such potential characteristics as can be transmitted from the union in question to the next generation. This tiny cell is the slender but effective thread that connects one generation with another and since it is not manufactured by the individual carrying it (it came from the same union which produced its bearer), it is said to be an endless "bridge" engulfing the gaps between all generations.

It is significant for an understanding of later development also that in cell division each new unit gets an equal number of maternal and paternal genes thus sharing equally the heritage from each parent.[40] This means that all somatic cells are identical in chromosome equipment, getting half from each parent, and that differentiation in later structures will have to be due to influences other than differences among cells.

The Dynamic Cell Relationship.—It has been known for over fifty years that the nucleus of a germ cell, instead of being composed of a single homogeneous substance, is actually an aggregate of linear threadlike components laid out in pairs (chromosomes).[41] Early investigators, such as Roux for instance, were inclined to believe that the potential characteristics of an organism were fully predetermined by heredity in the sense that the development of its ultimate structure was an exclusive function of the activity of germinal protoplasm. Only at a certain stage in the development of the machine did it begin to function itself.

This view leaves out of account the influence of environmental stimuli as well as the developmental effects of the early responses of the growing embryo itself. Child,[42] who has done outstanding work in this field (physiological gradients), takes exception to the foregoing exclusively hereditarian explanation of growth in the following language: "This conception is fundamentally preformistic and fails to take account of the facts of physiology. Reaction to environment is occurring at all stages of development, . . . Moreover, such behavior or reaction is itself a factor in development and therefore in the construction of the behavior mechanisms of later stages. The behavior of the various developmental stages as well as the specific hereditary constitution of the protoplasm is a factor in determining the behavior of the fully developed organism. . . . "

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[40] E. B. Wilson, *The Physical Basis of Life*, Yale University Press, 1923, p. 10.

[41] W. Roux, *Ueber die Bedeutung der Kernteilungsfiguren*, W. Engelmann, 1883.

[42] C. M. Child, *Physiological Foundations of Behavior*, Henry Holt & Company, 1924, pp. 1–5.

That Child's view of the matter has been abundantly attested to by experimental data touching on both external and uterine environments, is well known to those informed in the biological sciences. As students of the physiological foundations of personality it may be advisable for us to turn to an examination of some of this evidence.

Influence of Inner Environment on Development.—It is a fundamental postulate that "what any particular cell of the individual produces is largely determined by the surroundings of that cell—by the cells in contact with it, and by the hormones that bathe it; in short by the internal environment—so that the same set of genes produces different results in different cases."[43]

This principle is illustrated by the question of whether different cells are destined to produce different structures of an organism. This can be determined by separating the cells of an available organism (such as the sea urchin) at the two- or four-cell stage. Contrary to first expectations actual tests showed that each cell subsequently gave rise to a complete individual of its own species. Since in their native state the two- and four-cell organisms would have cooperated to produce the same single individual as did the detached cells there must be some factor besides the gene content that assists in the determination of what will be produced. Obviously, what given cells will do at this early stage is dependent upon their relations to surrounding cells and not upon different gene make-up.

In the sea urchin, we have a good example of the important role played by two developmental factors other than gene inheritance—environment and the cytoplasm. It has been observed that when a two-celled sea urchin egg becomes separated each cell (which develops a complete individual) is in direct contact with sea water instead of being largely in the environment of another cell. This diversity of surroundings makes a difference in the metabolic activity of the cell, thus effecting a difference in the course of development. And as Jennings[44] mentions, the three zones of the cytoplasmic body of the sea urchin single egg cell are also more effective than the genes in determining what structures will eventuate. If a part of the cytoplasm is removed surgically, "the corresponding part is lacking from the body later produced." This is true even when the entire nucleus (genes) of the cell involved is intact. We see, then, that the genes are not exclusively the bearers of heredity—even physical heredity.

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[43] H. S. Jennings, *op. cit.*, p. 122.

This idea of cytoplasm responsibility for some features of physical inheritance, not included in the Mendelian ratio, is emphasized by Shull[45] when he claims that the light green stripes observed in corn are the result of cytoplasm activity. This conclusion is not, however, regarded as being fully established.

Child[46] has expressed himself also as believing that we have much to gain by admitting "that environmental factors play some part in ordering and unifying the process of realization of heredity potentialities in the development of the individual organism. . . ." That he is right about the role of environment in embryonic development is indicated by some recently observed facts. First, since in the case of some embryos, it is known with considerable certainty which structures of the later individual will be produced by certain groupings of cells, it might be thought that the ultimate fate of every cell was definitely predetermined by gene influence. This a priori conclusion does not, however, turn out to be tenable. If, in the early phase of growth, cells that seem destined to produce bone, for example, are transplanted to an area that is producing skin, their course is changed and they end up by assisting in the development of skin just as their surrounding cells are doing. Thus the integrity of the growing organism is insured by a controlling environment which organizes the development of the fast multiplying cells into a definite structural pattern.

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[44] *Ibid.*, pp. 87–88.

[45] A. F. Shull, *Heredity*, McGraw-Hill Book Company, Inc., 1926, Chap. 16.

[46] C. M. Child, *op. cit.*, p. 32.

In time, continuous gene and cytoplasm interactions produce structures definite enough to resist modification of cell development. From this stage on, transplanted cells, instead of adjusting to the task of neighboring cells, continue to develop the type of structure in favor of which they began, thus resulting in the growth of legs, eyes, or tails, as the case may be, in most inappropriate places. This phenomenon probably accounts for many of the monstrosities and curious animals reported in *Believe It or Not* and elsewhere.

The External Environment Influencing Growth.—The effectiveness of the external environment in modifying the potentialities of gene action is illustrated by experiments with the salamander (*Axalotl*), which is normally a water animal possessing gills, finlike legs, and a flat tail. When this creature is required to develop on land, away from its usual watery environment, it develops into a land animal (*Amblystoma*), with lungs, a round tail, and differently shaped legs. According to Gray,[47] this change is brought about by the action of the environment in stimulating the genes to transform the animals' structure in favor of land adjustment. It would probably be more correct to reason that the watery environment prevented the salamander from developing past the tadpole stage whereas the land surroundings permitted the genes to prolong the development of its structure to the Amblystoma stage before egg production.

Hoge[48] has shown that in the case of the fruit fly (Drosophila) abnormal temperature during hatching will tend to produce anomalies of structure. For example, in a lowered temperature the fly will develop "supernumerary" legs instead of the usual six. This is just another illustration of the influence of the environment working in amalgamation with the "bearers of heredity" in determining the ultimate characteristics of even organic structures. Combine with this the effects of the organism's responses to its surroundings and we have a complex of factors giving shape to physical development instead of the supposedly single gene influence so common in the arguments of the "hereditarians."

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[47] J. S. Gray, A Biological View of Original Nature, *Educational Administration and Supervision*, 16: 654–655, 1930.

[48] M. Hoge, The Influence of Temperature on the Development of a Mendelian Character, *Journal of Experimental Zoölogy*, 18: 241–285, 1932.

V. ACQUIRED CHARACTERISTICS AND HEREDITY

Problems of heredity have ever been most attractive to the popular mind. The issues involved have, moreover, been fraught with much speculation. Mankind is known to be characteristically gullible and subject to a marked inability to distinguish between fact and fancy. His willingness to accept unverified beliefs is facile indeed.[49] This observation is nowhere more obvious than in the field of heredity. All sorts of unfounded ideas concerning the inheritance of parental characteristics have been and in many quarters still are the order of the day. In view of this situation it seems imperative that we secure whatever tangible light is available on this subject.

Early Views and Controversies.—Among nineteenth century scientists who attempted to treat the problem of genetics at all systematically, Lamarck was the first to expound the theory of inheritance of acquired characters. He offered the theory because he needed it to explain the gradual progress of mankind along various lines of development. Charles Darwin's epoch-making conclusions, touching on the theory of natural selection, also required some explanation for the supposedly upward trend of mankind, so he too espoused the idea of acquired modifications and their inheritance.

Neither Lamarckian or Darwinian doctrines offered an explanation of the mode of inheritance since the precise nature of gene action was not known to them. Darwin did, however, offer the theory of Pangenesis which, as the name indicates, states that minute elements, called gemmules, are given off by all parts of the body and are eventually incorporated into the germ cells there to register their influence in further propogation. How these particles of somatic protoplasm could find their way to the reproductive cells and then perform the miracle of producing potential skills and other characteristics in future individuals, without provision of the concrete situations which originally gave rise to the skills in question, was beyond more modern scientists and eventually the whole theory was discredited.

It is to Weismann that we owe not only the overthrow of previous speculative proposals but also our current knowledge of the continuity of the germ plasm and its independence of somatic influence. It is he who in the eighties paved the way for our understanding of the principles later to be offered by Mendel's discoveries.

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[49] See L. P. Thorpe, Education and Naive Belief, *Phi Delta Kappan*, 18: 79–82, 1935.

Conflicting Evidence of Inheritance.—Many experiments dealing with the problem of transmission of learned characters have been reported, some evidently being designed to buttress the investigator's a priori views. Most of the evidence is negative but should, nevertheless, be given every consideration.

The well-known Russian physiologist Pavlov startled students of genetics when in his lectures he reported an experiment in which white rats, who had been conditioned to go to a feeding place at the sound of a bell, produced progeny who could learn the same conditioned stunt in much less time. Later generations were said to improve greatly on their forbearers.[50] Sometime later, Pavlov discovered an error in his deductions which vitiated the whole business.

Vicari[51] conducted an extensive and carefully planned investigation designed to disclose the status of the inheritance problem in the case of mice and secured evidence contradictory to Pavlov's. MacDowell[52] did much the same thing in an attempt to learn the hereditary effect on progeny of maze-running practice. The offspring of his trained rats displayed no improvement over those without training.

One of the most interesting episodes in the inheritance controversy was that of Kammerer[53] who maintained stoutly that in his experiments with the salamander the inheritance of acquired characters was not only common but customary. He claimed that if germ cells from the body of an ordinary salamander were placed in the body of one in which a yellow color had been "induced" the body of the latter would generate the yellow color in the resulting offspring. In the face of so much evidence to the contrary, it was natural that workers should distrust Kammerer's technique and reliability. In the end, it was discovered that he was deceiving the public and so his proposals collapsed.

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[50] Reported in W. Rand, M. E. Sweeny, and E. L. Vincent, *op. cit.*, pp. 102–103.

[51] E. M. Vicari, The Non-inheritance of the Effects of Training, *Science*, 59: 303, 1924.

[52] E. C. MacDowell, Experiments with Rats on the Inheritance of Training, *Science*, 59: 302, 1924.

[53] P. P. Kammerer, *The Inheritance of Acquired Characteristics* (trans. by Paul Maerker-Branden), Liveright Publishing Corporation, 1924.

Probably the latest and most talked of experiment is the one by McDougall[54] in which he trained rats to escape by swimming through a specially constructed water tank. McDougall claims that when the training was continued for several generations the time required by the rats was gradually reduced as a result of the acquirement of this skill in the earlier generations. This conclusion has met with much skepticism.

Conclusions and Implications.—In view of the apparent preponderence of evidence against the popularly accepted theory that acquired characters are inherited it is natural that scholars should think of the germ cells as being relatively independent of influences from somatic sources and consequently to regard all observed characteristics in offspring as issuing from either regular gene inheritance in collaboration with the modifying effects of their own activity and environmental medium, or from the normal processes of learning. Education and other forms of cultural development cannot apparently be transmitted to future generations; each must start from the beginning in its struggle for individual development and social integration. The problem of child rearing would be simple indeed if parents could through rich experience develop attractive personalities and then, as if by magic, transmit the same ready-made to their fortunate but immature children. In the light of present knowledge, such a proposal sounds not only farfetched but essentially visionary.

The present status of the matter has been summarized by Walter[55] in his statement of why Weismann rejected the popular speculative view of his day: "First, there is no known mechanism whereby somatic characters may be transferred to germcells; second, the evidence that such a transfer actually does occur is inconclusive and unsatisfactory; third, the theory of the continuity of the germplasm is sufficient to account for the facts of heredity without assuming the inheritance of acquired somatic characters."

The question is not, however, a fully settled one since some ridicule the idea of germ plasm being completely insulated against the influence of somatoplasm in an integrated physiological unit such as the human organism. In fact, Guyer and Smith[56] claim to have been able to so affect the eyes of unborn rabbits through injections (in the mother) of a certain preparation, that the same affliction was inherited in the form of degenerate eyes in several succeeding generations without further injections. This may be just a case of the congenital transmission of an infection.

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[54] W. McDougall, An Experiment for the Testing of the Hypothesis of Lamarck, *British Journal of Experimental Psychology,* 17: 267–314, 1927.

[55] H. E. Walter, *op. cit.,* p. 71. Quoted by permission of the publisher.

VI. PRENATAL DEVELOPMENT AND INFLUENCE

Having described briefly the nature of the dynamic cell relationship in intra-uterine life and the developmental process of cell division (mitosis), it remains to mention some of the influences that can be brought to bear upon the growing fetus previous to the experience which we call birth. There will be no attempt to describe the details of growth[57] *in utero* except to point out the implications of the nature of the connection between the fetus and the mother. This point is of paramount importance since it is our clue to a solution of the many popular superstitions purporting to explain birth marks, special talents, and unusual tendencies. This is another area in which the credulity of mankind is very much in evidence. Here, as nowhere else, is the principle of causation naïvely distorted.

Influencing the Growing Fetus.—After fertilization of a human ovum (in the Fallopian tubes) takes place, the mitotic process is accompanied by a migration toward the uterus of the mother. Before reaching its destination, the growing ovum has become surrounded by a membrane (chorion) which is designed to intertwine itself into the expanding uterus wall of the parent. Thus a connection is established between the previously independent embryo and the inner surface of the mother's body. The connection is an indirect one since villi (tiny blood vessel endings) at the end of the umbilical cord coming from the child, penetrate the placenta on the surface of the uterus of the mother, but do not receive blood or nourishment directly from the maternal blood stream. Nutritive material and oxygen find their way from the maternal to the fetal blood by way of a process of diffusion through the walls of the villi which come in contact with the maternal blood.

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[56] M. F. Guyer and E. A. Smith, Studies on Cytolysius. II. Transmission of Induced Eye Defects, *Journal of Experimental Zoölogy*, 30: 171–215, 1920.

[57] A fuller account may be found in A. R. Gilliland, *op. cit.*, Chap. 7.

It is important to notice the nature of this indirect connection since it obviously has an important bearing on the question of possible maternal influence on the fetus during gestation. The conclusion from such biological and embryological knowledge as is now extant is that there is neither a nerve connection nor a direct blood-vessel connection between the mother and the unborn child. On this situation rests the conclusion of most biological scientists that the notion of direct influence of a mother's mental experiences upon the structural or mental growth of the fetus is nothing but a myth. Of course, biological science does not claim that its knowledge is ultimate or closed, but the facts of prenatal development as known to it lead its exponents to discredit the popular theories of prenatal influence.

Many people believe implicitly that certain experiences occurring to an expectant mother will unerringly leave their marks on the child's body or attitude. Trow[58] tells of a woman who ascribed a ham-shaped birthmark on the face of her child to the fact that she had while pregnant bumped her face on a ham hanging in a dark cellar. He also tells of a negro laundress who claimed that her skill was due to the fact that during gestation her mother had been accustomed to sit and talk to a skilled ironer while the latter worked. Trow calls these yarns "old wives' tales—mere fabrication or coincidence."

The trouble here is that naïve people ascribe effects to alleged causes which could not possibly be relevant to them in terms of the way natural phenomena operate and which, as the science of genetics indicates, are completely out of harmony with the germinal nature of physical inheritance. It requires very little mental acumen to realize that, because an experience such as desiring strawberries during pregnancy preceded in point of time a strawberry shaped birthmark on the body of the subsequently born offspring, there is no necessary causal connection involved and that the result is probably one of coincidence. One wonders, as did Doctor Fournier in Anatole France's[59] story of Little

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[58] W. C. Trow, *op. cit.*, p. 416.

[59] Anatole France, *Little Pierre*, Dodd, Mead & Company, Inc., 1925, p. 12.

Pierre, what would happen to a poor child if during gestation his mother should, instead of longing for cherries only, "hanker after feathers, trinkets, a cashmere shawl, a coach and four, a town house, a country mansion, and a park!" Besides, there is the matter of the neglect of literally hundreds of negative cases which did not work out and which are consequently never mentioned. It would be refreshing indeed if everyone would come to realize that because one event precedes another in time it is not necessarily the *cause* of the second event.

Germinal vs. Congenital Transmission.—The author has frequently observed that there is much confusion in the thinking of students between *germinal* inheritance as we have defined it and *congenital* transmission. Germinal inheritance has reference to the influence of differential factors in the germ plasm as it is stimulated and modified by the environment. But a mature germ cell (male or female) may be so affected by alcohol, for example, before fertilization that the offspring will be affected. The most prominent type of prenatal influence however, is that exerted on the embryo while in the body of the mother after fertilization. At this time a variety of influences which we shall mention shortly may be brought to bear on the growing child. Conditions following upon these prenatal experiences are called *congenital.* As Curti[60] writes, "A trait or condition appearing as the result of any prenatal environmental influence, during intra-uterine development, may be called congenital."

Criteria of Congenital Inheritance.—Some of the congenital conditions which may leave deficiencies in their wake have been stated by Schwesinger[61] as: (1) Extreme malnutrition of the mother during pregnancy may cause the embryo to be deprived of much needed nutritive elements from the maternal blood stream.[62] (2) Prolonged and wasting diseases, such as tuberculosis, cancer, diabetes, and pellagra, may produce effects similar to those resulting from malnutrition.[63] (3) Infections, particularly syphilis, may have a serious effect on the nervous system, causing a child to be born weak and "nervously unstable." Healthy parents may be carriers of germs which attack the unborn child.[64] (4) Toxins may affect adversely the developing embryo through poisoning its system. It is believed that this may even occur before conception. The evidence for parental alcoholism is, however, somewhat conflicting.[65] (5) Deficiency or excess of ductless-gland activity may, during gestation, seriously affect the mentality of the offspring. Cretinism, a disease characterized by marked physical and mental retardation, is one of the outstanding examples and is due to a deficiency in thyroid equipment. It sometimes responds to treatment.[66] (6) Birth injuries, due to pressure on the soft bones of the skull during labor and resulting from the use of mechanical instruments, may occasionally cause an arrestment of neural growth resulting in feeble-mindedness. Cases ascribed to this cause are no doubt sometimes germinal, but parents feel better if they think otherwise.[67] (7) Theoretically, severe emotional shocks which bring in their wake glandular disturbances and perhaps marked uterine contractions may affect adversely the blood stream supply going to the fetus, thus affecting the mentality and nervous stability of the growing child. Practically, little of a definite nature is known about this relationship, and, pending further investigation, it is probably best to reserve judgment concerning it.

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[60] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, p. 50.

[61] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, pp. 331–332.

[62] A. F. Tredgold, *Mental Deficiency*, William Wood & Company, 1908, pp. 296–299.

[63] A. Myerson, *Inheritance of Mental Diseases*, The Williams & Wilkins Company, 1925, pp. 42–47.

The practical import of these categories of prenatal influence is apparent. Most of them are, on the face of things, preventable and can be dissipated through an intelligent control of conditions. Those who expect to become parents can avoid some of the unhappy results mentioned by keeping themselves free from venereal diseases and by abstaining from indulgence in alcohol. The implications of these considerations for the personality growth of unborn children is so obvious as hardly to require mention.

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[64] H. C. Solomon and M. H. Solomon, *Syphilis of the Innocent*, United States Interdepartmental Hygiene Board, 1922, pp. 36–37.

[65] N. V. Scheidemann, *The Psychology of Exceptional Children*, Houghton Mifflin Company, 1931, pp. 18–19.

[66] A. F. Tredgold, *op. cit.*, pp. 251–254.

[67] *Ibid.*, pp. 27–30.

VII. SUMMARY AND IMPLICATIONS FOR PERSONALITY

If human personality in all its integrated ramifications, as conceived and defined in chapter one of this volume, is to be regarded as amenable to change and modification for the better, it is necessary that we attempt to clarify the air, as it were, in this matter of what is actually inherited through biological (gene) transmission. If it can be shown that moral and mental "traits" follow the same mechanical and inevitable inheritance ratios as physical attributes such as eye color and size of feet, then we might as well admit that nothing much can be done about an individual's chances for social improvement once he has fallen heir to a certain germ-plasm constitution.

This line of dogma is, however, plainly fatalistic and smacks strongly of predeterminism. Furthermore, it perpetuates a fallacy in scientific thinking which we may call oversimplification. To oversimplify complicated events tends to discourage investigation into the ultimate nature of processes and is probably no more excusable than violation of the well-established principle of *parsimony*.

Nevertheless, we have all witnessed examples of the crusading spirit of ardent eugenists who trustingly believe that "crime is largely due to bad germ cells." Consider, for example, the import of such statements as "*Have you any laws in your state for finding potential criminals, prostitutes and paupers while they are yet children*, which science can now often do, and thus prevent their future ravages upon society as well as their own misery?" and "When people learn that at least half their hospitals, asylums, jails, reformatories, and breadlines are due to weak and poor heredity, they are going to wake up to race improvements as a matter of everyday economic and social concern."[68] These declarations, are, of course, a priori and thus mean nothing to the critical student who seeks for tangible evidence, or at least convincing logic, before coming to conclusions about anything in the realm of verifiability, especially concerning such highly questionable assumptions as the alleged gene inheritance of criminal tendencies. Unfortunately, however, the populace at large has been powerfully influenced by the dogmas of extreme

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[68] A. E. Wiggam, *The Fruit of the Family Tree*, Bobbs-Merrill Company, 1924, pp. 287, 299. Copyright 1924, 1926. Quoted by special permission of the publishers.

"hereditarians." In all fairness, it should be mentioned that while definite connections between gene constitution and subsequent development of physical structures have been shown to obtain (especially in lower animals), no one has demonstrated the presence of a positive mechanism for the gene inheritance of such human qualities as consistent moral behavior and personal industry or initiative. These and many other socially significant attributes are ostensibly highly amenable to environmental pressures and could in all logic be ascribed to the effects of early stimulating situations favorable in the social-psychological sense to the production of such responses. It is true that unequivocal environmental cause and effect relationships have not been established for the development of these or similar qualities in a way that can be mechanically or universally applied, but a great many relationships sufficiently clear to be controlled by individuals who understand the dynamics of human nature well enough to estimate the composite effects on behavior of environmental patterns, have been fairly well established.[69]

In spite of these considerations, we find some (biologists and related scientists especially) who come out rather flatly with declarations that some of the apparently acquired virtues and faults of the personality are gene inherited. Throughout his writings, Jennings makes it clear that he regards a normal environment as indispensible for the realization of gene potentialities, but every so often he reverts to the proposition that after all the genes are the determiners of such outcomes as *morality* and *conduct*. In a popular article, Jennings[70] delivers himself of this statement: "It has been discovered that differences in the set of materials (genes) out of which people are made affect deeply their nature and character in every possible way—physically, physiologically, emotionally, mentally, morally. There is no respect in which changes in these materials do not cause changes in the individual." In much the same vein, Walter[71] expresses the belief that "There is, . . . no fundamental scientific distinction that can be drawn between moral, mental, and physical traits, which undoubtedly are all equally subject to the laws of heredity." This writer goes on to say that he believes that the moral defects of the famous Jukes gallery of undesirables illustrates the principle of moral inheritances. We might add that from a critical standpoint the much quoted Jukes-Edwards-Kallikak histories prove practically nothing so far as biological inheritance is concerned.[72] There were no controls or analytical examinations in any of them.

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[69] See for example W. Healy, A. F. Bronner, E. M. H. Baylor, and J. P. Murphy, *Reconstructing Behavior in Youth*, Alfred A. Knopf, Inc., 1929, especially Chaps. 22–24.

[70] H. S. Jennings, How Heredity Affects Personality, *The Parents Magazine*, 6: 17, 67, 1931.

[71] H. E. Walter, *op. cit.*, p. 301. Quoted by permission of the publisher.

This dogma of heredity has influenced the American home until it is difficult to find one trait, physical or otherwise, that someone does not regard as germinally inherited. About the only trait the author has found to be free from such alleged origin is the well-known wooden leg. Individuals are frequently misled by the presence in a family of a mental or emotional characteristic for several successive generations. They find it difficult not to regard such traits as genetically inherited. The patent fact that conditions in such a family may be highly conducive to the "social inheritance" of the "traits" in question is easily overlooked. A recent discussion[73] of this issue brings out this point very well: "It is easy to assign familiar traits to heredity when their occurrence is due to undiscovered factors in the family environment. Mental characteristics, personality likenesses and behavior need especial care in their study since they are developed and secondary and may or may not have their basis in heredity."

Many individuals find solace in the fatalistic view of inheritance since it gives them a splendid opportunity to rationalize their own failures as due to inherent handicaps. The same is true of parents who escape from the humiliation of failure with their children by accounting for their uncontrolled vagaries in terms of the relentless fates of heritage. The mother dismisses her difficulties with a troublesome offspring by the simple expediency of declaring that she can't do a thing with him since "he is just like his father." And she means all too seriously that he was "born that way."

In the end, the sensible view is probably to recognize that we inherit genetically the physical organism with all its interrelated structures together with the functions, autonomic and otherwise, which the dynamics of growth provide. This constitutes the biological foundation of personality and is the "adaptive organism" upon which we proceed to build the total integrated personality with all its accretions of learning and specific dispositions to behave in desirable ways. While the physical body even is significantly conditioned by the surroundings which play on the developing germ plasm, to a far greater extent are character and conduct developments due to the modifying effects of the social milieu. Thus we may think of the superstructure of personality as growing out of the labyrinth of experience and as having its roots in the genetically inherited organism.

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[72] P. A. Witty and H. C. Lehman, *op. cit.*

[73] W. Rand, M. E. Sweeny, and E. L. Vincent, *op. cit.*, p. 83. Courtesy of the W. B. Saunders Company.

Questions for Stimulating Thought and Discussion

1. Justify the concept developed in this chapter that heredity and environment have no real separate identity. What bearing has this concept on the personality theme?
2. Has it been shown that character and personality qualities are biologically inherited in the same manner as physical characteristics? If so, what is the evidence? If not, how do you account for positive statements to that effect in scientific literature?
3. To what extent does our knowledge of gene action in inheritance provide a basis for prediction concerning the physical qualities of expected human offspring? What is the explanation when such offspring are greatly dissimilar to their parents?
4. What significance has the genetic principle of paired gene inheritance for personality study? Is it known with finality that subnormal intelligence can be due to the chance pairing of two or more defective genes?
5. To what extent can personality characteristics in humans be said to be inherited by way of Mendelian ratios? Why is it so difficult to trace the transmission of even physical traits in humans on the Mendelian basis?
6. What are the practical advantages of understanding the operations of gene inheritance as they relate to blending, linkage, dominant and recessive traits, organic defects, and the like? Does genetic knowledge assist in the realms of character and morals? Explain.
7. What is the significance of Child's statement that, even during intrauterine life, "Reaction to environment is occurring at all stages of development"? What evidence can you present showing that the physical characteristics of a growing embryo are noticeably affected by its material surroundings?
8. How would you explain the origin of such animal monstrosities (five legs, two heads, etc.) as are pictured in Ripley's *Believe It or Not*, and other such presentations? Could anomolies of this sort occur in the human species? How?

9. If, in the face of an understanding of the protected and isolated nature of reproductive cells in the human organism, one argued for the validity of the theory of inheritance of acquired personality characteristics, what plausible mechanism for such transmission could be advanced? What is wrong with Lamarck's and with Darwin's proposals?
10. Does the nature of the connection between an expectant mother and the developing fetus make possible a control of the child's future temperament or attitude toward life? Is our knowledge on this point absolutely final? Defend your answer.
11. How do you account for the proclivity of educated people to make ardent claims for the biological inheritance of criminal tendencies, varieties of insanity, vagrancy, immorality, lack of industry, and other forms of undesirable personality? What scientific data can they advance for their contentions? How would you defend their views in a debate?
12. In what way can a presentation of the biological foundations of personality as set forth in this chapter contribute toward an understanding of the nature of the total personality structure? Does such a presentation tend to promote fatalism or optimism in the matter of possible personality improvement?

Recommended Readings

CHILD, C. M.: *Physiological Foundations of Behavior*, New York: Henry Holt & Company, 1924.

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GILLILAND, A. R.: *Genetic Psychology*, New York: Ronald Press Company, 1933, Chaps. 7, 8.

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MORGAN, T. H.: *The Theory of the Gene*, New Haven: Yale University Press, 1926.

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CHAPTER III

EDUCABILITY OF THE PERSONALITY: I. THE NATURE AND ORIGIN OF INTELLIGENCE

I. THE NATURE-NURTURE ISSUE

If the logic presented in our preceding chapter is sound, it is evident that there are no genuinely consistent grounds for assuming a relative nature-nurture controversy. Without the potentialities inherent in the germ cells, environment would be nothing, and, without benefit of the environment, genes would be impotent, unable to develop or even exist. Thus each without the other has no meaning. We are dealing with a composite influence which is a unique integration of both heredity and environment.

In spite of these considerations we occasionally encounter statements to the effect that the relative influences of nature and nurture represent a ratio such as 80:20 or perhaps 40:60. Burks[1] came to such a relative quantitative conclusion in connection with the California nature-nurture investigation when she estimated the contribution of heredity to be around 75 to 80 per cent. Except with twins whose gene inheritance is identical, thus permitting a control of one of the factors involved (inheritance), such a comparison has little significance.[2] As Trow[3] says, it is comparable to attempts at estimating the relative influence of the two blades of a pair of shears or of the heat and water necessary to the boiling of an egg. The fundamental error lies in viewing nature and nurture as separate forces whose relative influences can be compared.

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[1] B. S. Burks, The Relative Influence of Nature and Nurture upon Mental Development, *27th Yearbook, N.S.S.E.*, Part I, Public School Publishing Company, 1928, p. 308.

[2] Holzinger estimated statistically the comparative effectiveness of heredity and environment in the case of such twins (identical) and found the two to be approximately equal (K. J. Holzinger, The Relative Effect of Nature and Nurture Influences on Twin Differences, *Journal of Educational Psychology*, 20: 241–248, 1929).

[3] W. C. Trow, *Educational Psychology*, Houghton Mifflin Company, 1931, p. 424.

Fallacies in the Nature-nurture Debate.—In addition to this tendency to regard heredity and environment as separate entities instead of as an inseparable amalgamation, the nature vs. nurture exponents run afoul of other logical fallacies. As an instance of this, we might mention some aspects of the mental-testing movement. It is generally conceded that intelligence tests do not measure directly simon-pure "inherited" intelligence. This is obvious if we insist on the thesis that inherited and environmental influences are inseparable in both prenatal and postnatal realms. Besides, we know full well that the complicated responses required in connection with intelligence tests are acquired in the course of home and school experience. It does not make sense to say that normal or superior infants have an inherited ability to cope with abstract situations or language problems. Those who think in terms of *isolated nature* vs. *isolated nurture* reason that since practically all children reared in a given country such as ours will encounter approximately similar opportunities to learn the skills and abilities exacted by intelligence tests, measurable differences among them may logically be assigned to native ability.

It is not difficult to detect the fallacies in this argument. In the first place no two individuals, including siblings, are exposed to exactly or perhaps even approximately the same intellectual experiences. One child has his older brother and a certain teacher, for example, in his environment while the older brother encounters his younger brother and a different teacher. In many cases, children are reared in widely differing environments under conditions that are known to have marked influence upon performance on the tests. We might mention social and economic status, conditions of health, the presence or absence of incentives and parental encouragement, opportunity for reading, and kind of formal teaching encountered. All these may affect ability to cope with our present verbal intelligence tests. Thus it is really illogical to think of performances on a test as being an expression of "inherited" ability. As Curti[4] brings out, an I.Q. of 60 may in one case be due, in the main, to a defective cortex, while in another it may have been influenced by malnutrition during infancy. Again, an I.Q. of 85 may be due to an impoverished environment as much as to alleged hereditary conditions. In fact, under more favorable conditions this particular I.Q. might have been around 100. Evidence for this statement will appear as this and the following chapter develop.

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[4] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, p. 64.

There are other fallacies to be noted in the nature-nurture debate. Jennings[5] has mentioned two that are outstanding. First, even where controls have as far as possible been set up to determine the relative influence of inheritance vs. experience, it is fallacious to conclude that a characteristic known to be due to genetic factors in one case must be ascribed to genetic influences in every case. Biologists would naturally be prone to this error since they think largely in terms of the ratios of "unit character" inheritance. Second, it is equally erroneous to generalize that because a given characteristic can be shown to be due largely to environmental influences in one case, it must of necessity be due to the same factors in all cases. This belief is especially attractive to behavioristic psychologists. In commenting on these diametrically opposed views, Huxley[6] reasons that "To believe that one alternate excludes the other (as many popular writers appear to do) is to fall into an elementary logical and biological error."

Discretion in these matters would evidently dictate an avoidance of both dogmatic declarations and extreme views, yet we frequently find eminent students in opposing camps uttering extravagent statements based on their personal convictions. From the biological viewpoint, for instance, Pearson[7] claims that "we inherit our parents' tempers, our parents' consciousness, shyness, and ability, as we inherit their stature, form, and standing." Speaking from the sociologist's angle, George[8] expresses the opinion that "the influence of heredity, which it is now the fashion to rate so highly is nothing compared with the influences which mold the man after he comes into the world."

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[5] H. S. Jennings, *The Biological Basis of Human Nature*, W. W. Norton & Company, Inc., 1930, 203–222.

[6] J. Huxley, The Concept of Race, *Harper's Magazine*, May, 1935, p. 690.

[7] K. Pearson, quoted in S. J. Holmes, *The Trend of the Race*, Harcourt, Brace & Company, 1921, p. 98.

[8] H. George, quoted in *Ibid*, p. 99.

Watson[9] has also assumed such a predominant influence for the environment that contrasted hereditary factors are almost wholly neglected. Thus the nature-nurture problem seems as far from a solution as ever.[10]

The Problem of Human Educability.—Even though we acknowledge the incongruity of the inheritance controversy and recognize the composite nature of the influence at work in modifying the personality from its genesis through the advancing years, we are still under obligation to realize that the environment, of which we hear so much, is, after all, the medium through which biologically transmitted factors (genes) register their potential effects. That is to say that while no relative percentage of influence can be assigned to the action of the environment as such, favorable influences within its domain are imperative to symmetrical personality development. It would be logical to reason that so-called "innate" potentialities, which would under favorable conditions prove to be superior, might under more inferior circumstances turn out to be mediocre or even subnormal. The popular notion that "genius will out" in spite of all handicaps is a delusion. No one knows how many "potential" geniuses have never been heard from because of poverty, lack of opportunity, ill health, inadequate incentive, and lack of intellectual stimulation.

As a nation we have come to recognize the efficacy of favorable conditions in shaping the social trends of individuals. This belief is attested to by an unparalleled system of universal education which is based upon the assurance that systematic education can and does make children better than they would be if left to chance experiences. Our faith in the power of constructive environmental institutions has been followed by the establishment of juvenile courts, mental hygienic clinics, child-welfare stations, scouting organizations, and other institutions for the insurance of proper development. All these institutions and facilities are founded on a thorough belief in the educability of man. They represent a denial of the thesis that heredity is all powerful or that each individual is predestined to occupy a certain station in life irrespective of fluctuations in educational advantages or environmental conditions.[11]

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[9] J. B. Watson, *Behaviorism,* W. W. Norton & Company, Inc., 1930, especially Chap. 5.

[10] For a critical summary of the problem involved see F. K. Shuttleworth, The Nature *vs.* Nurture Problem, *Journal of Educational Psychology,* 26: 561–578, 655–681, 1935.

As Mursell[12] aptly says, "If it were possible to pick out a Solomon Islander, an English aristocrat, a New York stock broker, an Arab tribesman, and a southern Negro field laborer—all of precisely the same native ability, all exactly equal in direct biological inheritance—we would find ourselves dealing with human beings so enormously different that it would be almost hopeless for them to understand one another, or to enter into any genuine communion. And these vast differences would come from social background and experience." This conclusion becomes all the more impressive when we realize that the relatively recent ancestors of most of us were Teutonic barbarians roaming the fields of Europe without thought of culture or refined propriety.

It is to evidence touching on this question of man's educational possibilities that the present and following chapter are devoted. Here we will be concerned with such questions as (1) the mind-body relation, (2) the nature of intelligence, (3) the problem of inherited structure vs. mental ability, (4) the mental age and intelligence quotient controversies, (5) the effect of favorable influences upon intellectual status, (6) the personal potentiality theory, (7) the problem of special talents, (8) the question of race superiority, (9) and the dogma of potential delinquency.

II. THE MIND-BODY RELATION

Nature of the Problem.—Historically, psychology and its illustrious parent, philosophy, have for generations been haunted by the puzzling problem of whether the human personality is ultimately single or double. As far back as Aristotle's time the assumption has been freely accepted by many that since man obviously possesses an immaterial mind or spirit which presumably thinks, feels, and acts, as well as a material body which is known to the senses objectively, he must be a dual organism. How these unlike factors are organized into a harmonious unit capable of making cooperative adaptations to material stimuli, has always been a mystery. In fact, the mystery has been so baffling that many, especially in modern times, have stoutly maintained that a monistic (single) explanation of the personality is the only tenable one. They are not impressed by references to integrating agencies such as the philosopher's entelechy or to theories of dualistic interaction. To them, dressed up revisions of Descartes's[13] postulation of a nonsubstantative soul as the guiding spirit of a material body in whose pineal gland it had its habitat, is not at all convincing. They insist that this naïve division of personality into two or more parts is making mischief in the realm of practical psychology. Since the separate existence of these categories is very doubtful, it is believed that such a division results in a violation of reality.[14]

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[11] A technical but enlightening account of environmental forces will be found in K. Lewin, *A Dynamic Theory of Personality*, trans. by D. K. Adams and K. E. Zener, McGraw-Hill Book Company, Inc., 1935, Chap. 3. The same account is also included in C. Murchison (Ed.), *Handbook of Child Psychology*, Clark University Press, 2d ed., 1933, Chap. 14.

[12] J. L. MURSELL, *Principles of Education*, W. W. Norton & Company, Inc., 1934, p. 24.

Yet the idea of a distinction between "spirit" and "body" is so thoroughly ingrained in the thinking of laymen that suggestions in opposition to it are regarded as violations of obvious and familiar facts. We are always encountering such dualistic expressions as "the *spirit* is willing but the *flesh* is weak" or "old in *body* but young in *spirit*." As Bode[15] says, "The distinction is so self-evident that it hardly occurs to our average person to make any difficulty about it."

In academic circles, the dualism vs. monism controversy is still very much alive. Although scientific psychologists are rapidly taking their stand in favor of a physical causation type of monism, there is by no means complete unanimity among them on this point. Some years ago, Dewey[16] made it clear that the fundamental error of the theory of formal discipline was its dualistic assumption which included a general "mind" capable of being trained for all-round effectiveness. Yet the rejection of this and other dualistic theories has not freed scientists even from thinking in terms of contrasted elements. As recently as 1931, Prof. Boring, in an address before the American Association for the Advancement of Science, recognized the unsettled nature of the issue when he spoke at some length on the problem of a proper disposition of dualism.

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[13] R. Descartes, in M. Dessoir, *Outlines of the History of Psychology* (trans. by D. Fisher), 1912, p. 91.

[14] A. G. Melvin, *Building Personality*, John Day Company, Inc., 1934, pp. 54–55.

[15] B. H. Bode, *Conflicting Psychologies of Learning*, D. C. Heath & Company, 1929, p. 1.

[16] J. Dewey, *Democracy and Education*, The Macmillan Company, 1916, p. 76.

It is natural that a variety of attempts should be made to untangle the Gordian knot of "mind" vs. "matter." A few of these are reviewed here since the solution accepted has an important bearing on one's conceptions of the nature of man. One's conclusion in this matter would obviously operate to determine the type of educational procedure deemed appropriate to the development of a satisfactory personality.

Psychophysical Parallelism.—According to this view the individual is a dual organism possessing an immaterial spirit or mind, which by definition exists in time but not in space, as well as a physical, substantive body. These contrasted substances are wholly unlike but are said to function together in a parallel fashion without enjoying a reciprocal causal relationship. Mental processes have no influence upon bodily activities and the latter in turn have no effect upon mental events. By some process beyond the ken of man, mental activities are paralleled by concomitant, but uninfluenced physical activities and vice versa. This thesis is espoused by educational and theological groups who are frankly interested in what they call "spiritual" education. They often speak, as did Pestalozzi, of education of the "heart" as contrasted with education of the "hand." On the other hand, scientists usually regard this view as untenable since it postulates a metaphysical mind alleged to be outside the circuit of physical cause and effect.

Dualistic Interactionism.—This is the view that while the human personality is a dual organization of mind and body, these may and do enjoy a reciprocal interaction. Thoughts, which are purely psychic or spiritual, initiate bodily movement and the latter in turn may influence tangibly the activities of the disembodied mind. This is usually called the common-sense view and is acceptable to most educated persons who have not made a meticulous study of the philosophical and psychological implications involved. Interactionism lies at the foundation of the old ideo-motor psychology of Herbartian days which assumed that spiritual ideas possessed force capable of causing the body to enact the motor activities contemplated by the mind. Thus the eagerness on the part of teachers to build an apperceptive "mass" in the minds of pupils germane to the initiation of virtuous behavior. A moment's reflection, however, will cause one to realize that we are again face to face with a mystery when we try to explain how nonmaterial, spiritual entities, themselves supposedly independent of neural activity, can influence the physical organism to make complex adaptive responses. This view may satisfy the uninitiated, but to believers in strict causation it throws the problem right into the lap of a treacherous dualism. On the other hand, as Chapman and Counts[17] comment, " . . . if some important aspect of human experience still defies explanation in these [mechanistic] terms, he [the interactionist] claims that a wider hypothesis must be sought—an hypothesis that will include all the valuable elements of the behaviorist explanation, and, at the same time, leave room for the entrance of conscious processes as determiners of conduct." Perhaps there are metaphysical entities which remain mysterious to us simply because we have not learned their relation to the physical world.

Epiphenomenonalism.—As the name indicates this hypothesis regards mental processes as a shadow or by-product of physiological activities. Mental events occur as a concomitant of neural activity, but are considered to be of secondary importance. As Ragsdale[18] writes, "It [the mind] is to be compared to a noise produced by an engine while running. It is something which is necessarily present, . . . but which is in reality a mere by-product of the more important fundamental activities underlying it." This hypothesis, when viewed from a dualistic standpoint, has but little application in psychology and is probably not widely held today.

The Double-aspect Hypothesis.—It has been assumed by some that perhaps there is no real distinction, except in philosophical speculation, between mind and matter; that they are essentially but allegedly different aspects of the same ultimate reality. The true nature of this ultimate reality is not so clear, but it could conceivably be thought of as the integrated physical organism in action as we know it and as we view it as our object of study, especially in the science of child psychology. This is a monistic conception, but it avoids the spectacle of a hopeless search for a satisfactory entelechy. It could be said, of course, that such an explanation merely sidesteps the issue by refusing to acknowledge the existence of a spiritual factor which has never been proved to be nonexistent.

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[17] J. C. Chapman and G. S. Counts, *Principles of Education,* Houghton Mifflin Company, 1924, p. 95.

[18] C. E. Ragsdale, *Modern Psychologies and Education,* The Macmillan Company, 1932, p. 26. Quoted by permission of the publisher.

The double-aspect view is practically that of American Gestalt psychology which denies the existence of a metaphysical ultimate which can be contrasted with matter. Wheeler[19] states the case succintly as follows: "Where it is convenient to describe it in terms of feeling, emotions, thinking, and sensory processes we shall not hesitate to use these terms. In any event we are accepting behavior just as we find it without assuming a mind-matter or mind-body problem." The late Dr. Warren[20] was generally regarded as the foremost exponent of this view. It might be difficult, as Powers and Uhl[21] state, to formulate a plan of education based on this hypothesis, but it is in harmony with the objective definition of personality as the integrated fusion of all habit patterns and reactions tendencies.

Another monistic view, similar to the double-aspect hypothesis just reviewed, is the so-called "double-language" or error-of-words hypothesis. It is naturally popular with those who prefer the dual language (mentalistic vs. materialistic expressions) of subjective psychology but who propose to stay close to the monistic postulates of a strictly objective psychology. Such individuals speak freely of such concepts as mind, consciousness, will, imagination, and the like, but they do not mean to assume the existence of metaphysical entities of a nonmaterial nature. This line of doctrine is held by a large group of psychologists who prefer the objective approach to the solution of personality and other psychological problems but who do not propose to follow subserviently the language restrictions of extreme behaviorism. It has great possibilities for students of personality development.

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[19] R. H. Wheeler, *The Science of Psychology*, The Thomas Y. Crowell Company, 1929, p. 19.

[20] H. C. Warren, *Human Psychology*, Houghton Mifflin Company, 1919, pp. 415–416.

[21] F. F. Powers and W. L. Uhl, *Psychological Principles of Education*, D. Appleton-Century Company, Inc., 1933, p. 39.

Inadequacy of Mind Theories.—Before considering the mechanistic proposals of materialistic psychologists, it will probably be beneficial to our ultimate understanding of the mind-body problem to pause for a brief consideration of further implications of belief in the substantive mind theory. As the preceding discussion indicated, such belief practically amounts to a flirtation with mysticism. And as Morrison[22] says, " 'mind' as the term is commonly used is a left over from the faculty psychology and the notion that there are mental organs analogous to bodily organs." According to this writer there is no place in psychology for the concept "mind" as a scientific term. Since all processes of the organism issue, in the last analysis, from an organic basis and on the principle of causation, it is manifest that there is no place for an independent, isolated mind. Such a separation is no more conceivable than the independent existence of gene heredity and environmental influences as contrasted and interacting forces. From this viewpoint, mind has no more separate existence than the "grin of a Cheshire cat" and is in the end only a convenient and unacademic label for certain classified responses of the total personality.

Reasoning in this way, we can follow the logic of the previously mentioned writer when he maintains further that the mind cannot be the recipient of an education. An individual develops with experience and learns to make adaptive responses but the so-called "mind-training process" is nothing but another name for the observed progress of his personality toward maturity. Furthermore, Bode[23] reminds us that a *little understood* substantive mind could hardly be utilized as an agency for interpreting experience, since "The procedure in such 'explanation' is to explain what we do know in terms of what we do not know, which is subversive of all scientific method." This means that the substantive-mind theory furnishes us, not with explanations, but with names.

Ever since the French philosopher Descartes made the startling announcement that he had located the long sought ethereal soul

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[22] H. C. Morrison, *Basic Principles in Education*, Houghton Mifflin Company, 1934, pp. 216–217.

[23] B. H. Bode, *op. cit.*, pp. 70–71.

(mind) in the pineal gland of the body, it has been the vogue to locate the "mind" somewhere and to identify it with some physical organ. Now it is no doubt true that what we call mental processes have their organic basis somewhere in the physical organism, but to localize the mechanisms involved to any specific degree is well nigh hopeless for the simple reason that complex functions of the organism are not confined to restricted areas but are responses of the body as a whole—of the total personality.

As an important example of this we have Lashley's[24] finding that so-called "mental skills" are not localized in the sense that neural bonds are established and subsequently "stamped in." Apparently preferential bonds and not preformed bonds are utilized as skills are developed. Incidentally, the latter are not localized as far as our best evidence indicates. It is apparent thus that many vexing problems harass the exponent of dualism with its localized "mind."

As a scrutiny of standard texts on the conflicting beliefs of the various "schools" of psychology indicates, the whole concept has proved troublesome and in the opinion of many, not very useful.[25] This does not prove, of course, that mentalistic theories are definitely erroneous; it may only be an indication of man's inability to cope with the complexity of the problems involved.

The Materialistic Assumption.—In a concerted effort to solve the enigma of man's organization, many modern scientists have carried the logic of physical monism to its natural conclusion and have thus postulated man as a mechanical organism operating on a strictly physical causation basis. This materialistic assumption makes a clean sweep of vitalism with all its teleological claims and mentalistic terminology. It views the organism as a physiochemical instrument which is in dynamic equilibrium with its environment and whose every response, implicit (mental) or explicit (overt), is a mechanical reaction to physical stimulation. This theory has ushered in the reign of natural law and has attempted to banish all conceptions of non-physical causation.

While John B. Watson is generally regarded as father and champion of this behavioristic psychology, others have offered mechanistic explanations of human nature that make his proposals seem almost conservative. Weiss,[26] for example, in postulating his conception of the nature of the organism declares, "More specifically, the human individual is defined as a locus in the movement continuum, constituting a relatively permanent electron-proton aggregate (the atoms, molecules, and tissues of the body) interacting with the electron-proton systems not within the body, to form the series of energy interchanges designated as the life processes of nutrition, reproduction, and adjustments." It is evident that materialistic psychologists regard the human personality, which is popularly believed to house a purposeful mind, as essentially an electron-proton aggregate which is identical in nature with inorganic substances except for the presence of that unique process called life. And since the latter is seen only in connection with protoplasm, it is believed to be due to "organizational properties" inherent in organic tissue.

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[24] K. S. Lashley, Basic Neural Mechanisms in Behavior, *Psychological Review*, 37: 24, 1930.

[25] See for example, E. F. Heidbreder, *Seven Psychologies*, D. Appleton-Century Company, Inc., 1933.

This explanation excludes all such teleological concepts as choice, purpose, or planning and dispenses with all arguments about mind, consciousness, and vitalistic principles in general. It is interested exclusively in a strict cause and effect determinism which paves the way for a psychological science capable of controlling and predicting behavior. Moss and Hunt[27] believe that this viewpoint has been most fruitful in the development of biological and psychological sciences, also that it offers the most tenable account of the nature of what is commonly called mental functioning. They insist that mind is a name for the functioning of the entire organism, including glands, viscera, and even muscles and joints. Incidentally, thinking is said to be an expression of energy movement in the form of subvocal speech.[28] But as Gray[29] contends, it is probably true that the less militant behaviorists do not propose to become "dogmatically negative" or "atheistic." They do not deny the existence of mind, but "until it (mind) becomes evident to the senses through some form of sensory extension," they prefer to assume that it probably does not exist.

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[26] A. P. Weiss, One Set of Postulates for a Behavioristic Psychology, *Psychological Review*, 32: 85, 1925.

[27] F. A. Moss and T. H. Hunt, *Foundations of Abnormal Psychology*, Prentice-Hall, Inc., 1932, pp. 4, 23.

[28] J. B. Watson, *op. cit.*, pp. 252–268.

[29] J. S. Gray, *Psychological Foundations of Education*, American Book Company, 1935, p. 39.

Evidence of the Unity of Mind and Body.—Advocates of physical monism do not find it difficult when challenged to advance tangible evidence indicating the single nature of the human personality. Believing as they do in a strictly physical basis of mind, they merely need to point out the effects on "mental processes" so-called, of specific physical changes or activities. As Moss and Hunt[30] reason, if a blow on the head results in the loss of consciousness or if a brain tumor causes a complete change in personality, it follows by logic that the functions in question are dependent upon tissue integrity. This conclusion indicates a unity of mind and body and obviates the need of bringing in dualism. Drugs, likewise, are known to produce startling effects upon reasoning power, not to mention their capacity for removal of moral inhibitions.

Sorokin[31] paints a gruesome picture of the state of morals obtaining among a tribe of people who were starving to death. According to him, men of ordinary honor and integrity frequently stooped so low as to devour their children or fellows while women of supposed chastity gave up their virtue for food. Be this as it may, we can at least be sure that the thoughts and activities of such unfortunate people are powerfully influenced by the organic processes associated with extreme hunger.

That glandular malfunctioning is to a great extent responsible for deficiencies and anomalies in mental ability and for emotional outlook in general is well known. Witness the plight of the cretin who has been the victim of glandular disturbances or the morbid outlook of a woman suffering from the bodily changes associated with involutional melancholy. We could mention as well the irritable responses of individuals suffering from temporary bodily ailments and the superficially animated "state of mind," of the inebriate. All these examples seem to indicate the inseparable unity existing between aspects of the human organism which many have tried unsuccessfully to separate; they argue for a monistic interpretation of personality.

Finally, it should be mentioned that in addition to the strictly mechanistic explanation of personality and the double-aspect varieties of monism described above there are many other proposals purporting to cut the Gordian knot of human nature.[32] The search for a theory that will avoid the mysteries of dualism while at the same time retaining a respectable place for freedom of choice goes on endlessly. The behaviorists have given up the choice element and thus rest content with their consistent theory of determinism, but there are many scientifically inclined students of personality who are loath to part with genuine goals and purposes and who feel that they need not do so. They believe that a wider principle, including both causation and teleology, will ultimately be disclosed and in the meantime they do not want to be caught rationalizing their views by perpetrating the fallacy of oversimplification of complex phenomena.

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[30] F. A. Moss and T. H. Hunt, *op. cit.*, p. 7.

[31] P. Sorokin, *Contemporary Sociological Theories*, Harper & Brothers, 1928, pp. 630–635.

III. THE NATURE OF INTELLIGENCE

In considering the problem of the educability of man, it is imperative that we come to as clear an understanding as possible concerning what is connoted by the term "intelligence." It will be remembered that many psychologists in enumerating the components of personality, give intelligence a prominent place. Pintner[33] lays down the proposition in the preface to his treatise on intelligence testing that "intelligence is one of the aspects of an individual's personality that is of great importance in modern civilized life." If this be so and if, as a preliminary statement, we think of intelligence as an individual's ability to make adaptive responses toward desirable goals, we are naturally under constraint to learn what we can about the true nature of intelligence. The question arises as to whether it is a general trait or factor or whether, like responses in the conduct field, it is essentially a name for a collection of specific

[32] Bertrand Russell has proposed a theory of "neutral monism" which attempts to obey both physical and psychological laws (B. Russell, *Philosophy*, W. W. Norton & Company, Inc., 1927). Fletcher advances the hypothesis of "identification" which is associated with the epistemological problem of knowledge but which is said to include the question of the mental processes by which knowledge is gained (J. M. Fletcher, *Psychology in Education*, Doubleday, Doran & Company, Inc., 1934, Chap. 12). We could mention also the subjective idealism of Berkeley, the pantheistic monism of Spinoza, and the rational idealism of Hegel and Fichte. Accounts of these may be found in standard works on the history of philosophy. A brief presentation is included in J. S. Gray, *op. cit.*, Chap. 1.

[33] R. Pintner, *Intelligence Testing*, Henry Holt & Company, 1931, p. vi.

adaptive reactions which depend for their character upon the circumstances of specific situations.

We are also led to inquire whether this thing called "intelligence" is a disembodied entity independent of organic processes or whether it is a name for a directive mechanism arising from the integrative action of neural structure. One's answer to this question indicates his stand in the matter of the singleness or duality of personality as well as to the question of whether intelligence is an innate inherited unit or whether it is an adaptive capacity relative at all stages of growth to the character and quantity of meaningful experiences accumulated.

If intelligence is innate, it must be quantitatively constant throughout the health life of the organism; if it is relative to favorable opportunities, it is obviously modifiable and will fluctuate with experience. In the present state of knowledge, it is not logically possible to accept one of these alternatives to the exclusion of the other since the evidence we have is conflicting. Some individuals improve greatly with educational advantages while others do not, and the improvement noted is by no means always relative to the quality and duration of the advantages offered. It is evidently another case of the amalgamation of heredity and environment in which the question of the relative influence of each has little significance due to the absence of controls. The quality of the environment probably makes possible the development of gene-inherited potentialities but in this case both factors are unknown quantities; besides they do not enjoy a separate existence.

This proposition is meaningful only in the event that we think of intelligence as an expression or result of the functioning of physiological mechanisms. That is to say, if we hope to hold a scientific view of the matter, we must avoid reifying an abstraction through regarding intelligence as a corporal entity; rather, it is encumbent upon us to view it as an active total-organism process of making specific responses of an adjustive nature to conflicting stimuli. This is the monistic view and leaves us free to study the intellectual improvability of the personality from a biological and empirical standpoint. Such a position tends to avoid fatalistic conclusions touching on man's educability and to take a more or less skeptical attitude toward the dogmas of hereditarians who contend that intelligence is essentially a "unit character," inheritable according to the regular ratios of Mendelian law.

Basic Conceptions of Intelligence.—In view of the fact that the term intelligence is used freely in popular parlance as well as in scientific discussions it is to be expected that diverse connotations will be attached to it. Unhappily this creates a situation in which we frequently find individuals using a similar nomenclature while having in mind widely different concepts. As the following definitions of "intelligence" indicate, this situation is to some extent in evidence even among psychologists.

Definitions of intelligence vary considerably and are not easy to classify according to conflicting "schools" or viewpoints in psychology. Pintner[34] has rendered an appreciated service by suggesting the following fivefold grouping: (1) biological, (2) educational, (3) a faculty, (4) empirical, and (5) miscellaneous. In some cases, the classifications made may appear a bit strained but on the whole the plan seems very useful.

The Biological Conception of Intelligence.—Definitions in this group focus on the idea of adaptation to the requirements of practical aspects of the environment. The degree of intelligence possessed by an organism will be indicated by the effectiveness of its adjustments to the conditions imposed upon it.

Stern's[35] oft-quoted definition belongs here. He says, "Intelligence is a general capacity of an individual consciously to adjust his thinking to new requirements: it is general mental adaptability to new problems and conditions of life." This teleological definition emphasizes adjustment, but it indicates a belief in intelligence as a general unified trait or capacity. Later discussions will bring out the difficulties of this view. For those who prefer the strictly objective conception of intelligence the definition by Peterson[36] is right to the point: "Intelligence seems to be a biological mechanism by which the effects of a complexity of stimuli are brought together and given a somewhat unified effect in behavior." This statement plainly regards intelligence as a name for the integrative action of physiological processes by which conflicting stimuli are harmonized in favor of organism welfare. Woodworth[37] subscribes to the adjustment notion when he writes that "He [subject taking the test] has to see the point of the problem now set him, and to adapt what he has learned to this novel situation."

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[34] *Ibid.*, pp. 47–51.

[35] W. Stern, *Psychological Methods of Testing Intelligence* (trans. by G. M. Whipple), Warwick & York, 1914, p. 3.

[36] J. Peterson, in the Symposium "Intelligence and Its Measurement." *Journal of Educational Psychology*, 12: 123–147, 195–216, 1921.

This biological approach to the meaning of intelligence is rapidly growing in favor due to its freedom from dualistic entanglements. It enables us to describe the adaptive behavior of animals as intelligent[38] without positing vitalistic principles as causes and in the absence of verbal ability. This view is clearly in harmony with the social objectives of progressive schools which profess to be interested far more vitally in the personality integration and social adjustment of their pupils than in the formal process of acquiring systematic knowledge for its own sake. Thus the adjustment concept of intelligence synchronizes with the functional movement in education.

Intelligence as Capacity for Learning.—In this category are placed such definitions as Colvin's[39] who regards intelligence as "a group of innate capacities by virtue of which the individual is capable of learning in a greater or less degree in terms of the amount of these innate capacities with which he is endowed." This is the older view which tends to restrict intelligence to learning ability—presumably ability to learn school subjects. It also emphasizes the exclusively "innate" idea which was so popular at the time Colvin was living. The same educational slant was expressed by Buckingham[40] when he declared that "intelligence is the ability to learn."

Strictly speaking the educational view of intelligence is much similar to the biological classification since both stress the ability to acquire satisfactory behavior patterns leading to an integration with the environment. Definitions in terms of ability to learn place a premium on rapidity and ease of acquiring knowledge.

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[37] R. S. Woodworth, *ibid.*

[38] Morrison takes decided exception to this use of the term. To him it should be confined to man's accumulation of learned *intellectual adaptations* (H. C. Morrison, *Basic Principles in Education*, Houghton Mifflin Company, 1934, pp. 103–107).

[39] S. S. Colvin, Principles Underlying the Construction and Use of Intelligence Tests. 21*st Yearbook*, *N.S.S.E.*, 1922, p. 17. Quoted by permission of the Society.

[40] B. R. Buckingham, in the Symposium "Intelligence and Its Measurement," *op. cit.*

Intelligence Regarded as a Faculty.—Intelligence described as a faculty does not sound so good in this day and age of "organismic" conceptions and yet the definitions of those listed below do not come far from qualifying under that title. They endeavor to restrict intelligence to certain semi-specialized abilities of the "intellect." On this basis, only those would be credited with superior intelligence who happened to be capable in the abilities identified with abstract intelligence. This point is well illustrated by Terman's[41] ardent emphasis upon intelligence as "the ability to think in terms of abstract ideas." His revision of the Simon-Binet tests is indicative of his emphasis on the ability to deal with abstract propositions and symbolic materials. This test is generally acknowledged to be the most reliable instrument of its kind, but it does restrict the meaning of intelligence largely to the "faculty" of abstract thinking. This works out very well in the measurement of ability to learn school subjects and similar materials, but it probably works an injustice on individuals who have marked intelligence along other lines not covered by Terman's tests of abstract ability.

This situation has caused many an argument[42] and is tending to restrict the names of so-called "general intelligence" tests to the specific functions which they attempt to measure. Schwesinger[43] calls the ability elicited by intelligence tests "test intelligence." Others prefer the term "abstract intelligence" or "scholastic aptitude."[44]

Binet's[45] definition of intelligence as quoted by Terman could be classified in part in this group. This would be true of his statement that intelligence is the tendency of thought "to take and maintain a definite direction."

Empirical Definitions of Intelligence.—As the title suggests these definitions stress the pragmatic results of intelligent action. The principle exponents of this group are psychologists who stress mechanistic conceptions of behavior. Thorndike[46] writes that "We may then define intellect in general as the power of good responses from the point of view of truth or fact." Pintner[47] is admittedly empirical when he says, "We must get away from the idea that certain stimuli constitute in and of themselves adequate intelligence tests on all occasions. We must free ourselves from the idea that there is a specific faculty of intelligence. We must remember that intelligence is merely an evaluation of the efficiency of a reaction or a group of reactions under specific circumstances."

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[41] L. M. Terman, in the Symposium "Intelligence and Its Measurement," *op. cit.*

[42] See, for example, W. F. Dearborn, *Intelligence Tests*, Houghton Mifflin Company, 1928, pp. 107–111.

[43] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, p. 169.

[44] C. L. Hull, *Aptitude Testing*, World Book Company, 1928, pp. 60–63.

[45] A. Binet, quoted in L. M. Terman, *The Measurement of Intelligence*, Houghton Mifflin Company, 1916, p. 45.

The unique characteristic of these definitions is their denial of the alleged unitary nature of intelligence and their emphasis upon intelligence as an "evaluation" of *specific* reactions. This view involves some difficulties which will come out in the next section, but has the advantage of being free from assumptions about hereditary restrictions or limited applications to specialized areas such as formal school materials.

In summarizing the various points of view regarding intelligence, Schwesinger[48] mentions the following aspects as being most often stressed: "Ability to think in the abstract, particularly to see relations; ability to act in accordance with such insight, which means the suppression of reactions leading away from the end in view, and the furtherance of reactions which would maintain the direction toward that end. In complex situations this 'power of adjustment' or 'mental adaptation' would call for new behavior patterns in different modes, as the end in view and the situation required."

Theories of the Nature of Intelligence.—The forgoing descriptions of intelligence as the adaptive agency in personality tells us to some extent why superior individuals excel others in certain functions but they do not attempt to solve the more fundamental problem of the true nature of intelligence and its relation to other important aspects of the individual. These issues may seem abstract to the "man in the street" but the serious student of personality will welcome evidence throwing light on their solution. They have an important bearing upon the question of man's educability. When translated into classroom procedures they vitally affect not only the teacher's practice but the selection of curricular material.

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[46] E. L. Thorndike, in the Symposium "Intelligence and Its Measurement," *op. cit.*

[47] R. Pintner, An Empirical View of Intelligence, *Journal of Educational Psychology*, 17: 608–616, 1926.

[48] G. C. Schwesinger, *op. cit.*, p. 11. Quoted by permission of the publisher.

Spearman's Two-factor Theory.—Spearman has always maintained that intelligence is a general ability. As early as 1904[49] he declared that "All branches of intellectual activity have in common one fundamental function (or group of functions) whereas the remaining or specific elements of this activity seem in every case to be wholly different from that in all the others." To him intelligence is fundamentally rational thinking—the examination of experience and the discernment of relationships and correlates.[50] Spearman's elaborate statistical studies indicated consistently high correlations among numerous specific abstract skills and a number of positive but low relationships between abstract and more specialized functions of a sensory nature.

In an effort to satisfy the testimony of these concrete data he formulated his quantitative principle of general intelligence. In spite of Binet's[51] assertion that general intelligence is essentially an aggregate of numerous specific and somewhat varied skills he reasoned that a general "energy" factor held most of them together, thus enabling the intellect to apply its powers in general. The low correlations were accounted for by an *s* or specialized factor which was said to partake only in a small way of the *G* (general) factor. Spearman[52] describes his principle in the following language: "*G* measures something of the nature of an 'energy' derived from the whole cortex or wider area of the brain. Correspondingly, the *s*'s measure the respective efficiencies of the different parts of the brain in which this energy can be concentrated; they are, so to speak, its 'engines.'"

The two-factor theory has encountered much criticism but has survived quite well due to the fact that it explains practically all the correlations involved and provides intelligence with a tangible physiological basis. The exclusive brain localization and the "engine" analogy are not, however, entirely convincing. Neither is the assumption that some functions must depend on the general factor while others get their impetus from the "engines" of the specialized factors.

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[49] C. Spearman, General Intelligence Objectively Determined and Measured, *American Journal of Psychology*, 15: 201–293, 1904. Quoted by permission of the publisher.

[50] C. Spearman, *The Nature of "Intelligence" and the Principles of Cognition*, The Macmillan Company, 1923, Chaps. 1, 9.

[51] A. Binet, in L. M. Terman, *op. cit.*, 42–46.

[52] C. Spearman, Some Issues in the Theory of "G," *Proceedings of the British Association*, Section J, 1925.

Thorndike's Synthetic Theory.—In advancing his theory of the nature of intelligence, Thorndike[53] recognized the significance of the correlations involved but rejected the assumption of a general unitary factor underlying mental ability. He regards it as a mistake to suppose "that some one function is shared by all intellectual traits, and that whatever resemblances or positive correlations the traits show are due to the presence in each of them of this function as a common factor." In harmony with his famous "bond" theory, Thorndike believes intelligence to be a summation of many special and sometimes unrelated abilities. The high correlations are explained by numerous "common elements" among the specific factors. Intelligence thus depends on physiological connections and the superior individual is the one who possesses "not a new sort of physiological process, but simply a larger number of connections of the ordinary sort."[54]

This theory of intelligence is physiological, but it suffers from the same criticisms that have been hurled at the "bond" theory in general. It has been vigorously condemned for its mechanistic attempts to formulate a total personality pattern by the synthesis of numerous discrete and localized physiological connections into a unified whole.

Kelley's Multiple-factor Theory.—Concluding from his statistical analyses, Kelley[55] believes that the *G* is not always as unified and consistent as it has been alleged to be. In fact he found what might be called *multiple factors* within Spearman's general factor. This means that intelligence, within its abstract domain (figuratively speaking), may be a multiple of integrated specific aspects such as memorizing ability, facility with numbers, skill with verbal materials, facility with spacial relationships, and speed of comprehension. These are not to be confused with the old so-called "faculties" of attention, reasoning, imagination, for example, but are rather specific groupings of similar abilities within the area of scholastic or abstract intelligence. Kelley estimates that if allowance could be made for maturity, race, sex, and general virtue, there would probably be no general consistent factor corresponding to Spearman's "central fund of intellectual energy." As we will note in the next section, Thorndike has found subdivisions of abstract ability corresponding in general to those disclosed by Kelley.

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[53] E. L. Thorndike, *Educational Psychology*, Vol. 3, Teachers College, Columbia University, 1914, pp. 363, 366.

[54] E. L. Thorndike, and others, *The Measurement of Intelligence*, Teachers College, Columbia University, 1927, p. 415.

[55] T. L. Kelley, *Crossroads in the Mind of Man*, Stanford University Press, 1928, pp. 21–23.

Schwesinger[56] reports other important recent developments along this line. According to her, some workers have found "groups" of abilities such as comprehension, memory ability with words, ability with numbers, and even mechanical abilities. These are said to be composed of primary functions welded together by such "bonds" as a "direction attitude," a "ready attitude," and a "music factor." Since these groups are different in kind, it is contended that they cannot be measured in the same dimension. According to some, this situation axiomatically makes "scrambled" mental tests invalid, since unlike "groups" are indiscriminately intermingled within them.[57]

These findings are very interesting and suggest that we are coming nearer to a solution of the intelligence problem. The arguments and suggested solutions remind us very much of the "trait" controversy as portrayed in Chap. I. It may be that intelligence, when thoroughly analyzed, will turn out to be comparable to these psychological traits. That is to say, it could possibly be regarded as specific in its early stages but as becoming progressively more consistent in areas subsumed under "factor" names as meaningful experience and maturity leave their generalizing effects.

Judd's[58] principle of transfer of learning through the wide application of generalized intellectual concepts may be involved here. Perhaps these generalized intellectual principles are the "welding" factors within the subgroups of abilities mentioned. It is to be expected that we will eventually find groupings of specialized ability since logical subject matter organization represents groupings of "identical elements" or, if one prefers, groupings of guiding principles.

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[56] G. C. Schwesinger, *op. cit.*, p. 13.

[57] C. C. Brigham, Intelligence Tests of Immigrant Groups, *Psychological Review*, 37: 158–165, 1930.

[58] C. H. Judd, *Psychology of Secondary Education*, Ginn and Company, 1927, Chap. 19.

So-called "Kinds" of Intelligence.—Human intelligence, when thought of in the satisfactory-adjustment-to-novel-situations sense, is obviously so broad in scope that it is only partially comprehended and measured in terms of our present intelligence tests. A moment's reflection will cause one to realize that we are continually called upon to deal with problems of a nonabstract nature—social problems, political questions, mechanical matters, artistic endeavors, and the like. Since these often involve adaptive ability of a high order and in view of the fact that they are not included in the traditional conception of abstract intelligence, as exemplified by our verbal tests, it has been suggested that we expand the concept to include several "kinds" of intelligence. Thorndike is generally given credit for the idea of a threefold division including (1) abstract, (2) concrete or mechanical, and (3) social intelligence.

By abstract intelligence is usually meant the ability to deal successfully with symbolic materials such as words, numbers, codes, and abstract principles. The school with its academic curriculum makes heavy demands on this kind of ability and so it has come about that our mental tests are heavily loaded with language problems. The means—and here is a vital issue—that practically all our verbal tests have been designed to focus on abstract intelligence.[59] In short, our intelligence tests are not tests of "general intelligence" at all, they are tests of one aspect or major "group" of intellectual abilities—the verbal or abstract.

By concrete or mechanical intelligence is meant an unusual capacity for coping with substantive things rather than with language symbols associated with them. We have all met people who are especially facile in manipulating mechanical devices. In tests of mechanical aptitude, such individuals frequently outstrip their more academic fellows. They are said to possess the mechanical brand of intelligence. This is the kind of ability displayed by engineers, inventors, surgeons, and the like.

Social intelligence has reference to diplomacy in human relations, to the ability to influence others in favor of desirable goals. Success in dealing with people so as to make good impressions, to gain popularity, and to sell ideas is the criterion of social intelligence. This is the kind of ability needed by public officials, salesmen, promoters, ministers, teachers, and administrators of all kinds.

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[59] R. Pintner, *op. cit.*, p. 55.

This hypothesis of *kinds* of intelligence involves both advantages and disadvantages. On the positive side, it has the advantage of relieving us of the embarrassment of any longer calling our present verbal tests tests of "general" intelligence. Obviously, a general test to be true to its name would have to sample an individual's ability along social, mechanical, and perhaps other less easily classified lines, as well as in the present restricted verbal area. As it now stands, we largely measure scholastic abilities and thus are only warranted in calling our instruments measures of *abstract* or *scholastic* intelligence. Tests in the mechanical and social spheres should likewise be identified with those spheres only. In this sense, we have no tests of "general intelligence." Of course the term is only a hang-over from Binet's pioneer discovery that intellectual skills are specific and that general intelligence can only be inferred from a large sampling of these specifics. But Binet had reference to *general abstract* intelligence.

Freeman[60] takes exception to this notion of kinds of intelligence. He believes in the existence of "true" intelligence alone and regards so-called "social" intelligence, for example, as a combination of this true intelligence and attractive personality traits such as "amiability, lack of timidity, a liking for people, . . . and even . . . personal appearance." This, he says, turns out to be a composite of social traits plus true intelligence and is not thus a different kind of intelligence. The same argument is advanced for "mechanical" intelligence. Besides, Freeman feels that the distinctions made lack statistical support. This is not entirely so since Pintner,[61] in his summary of studies dealing with the problem gives the average correlation of thirteen studies of *abstract* vs. *abstract* intelligence as about .75 and the average between studies of *abstract* vs. *concrete* intelligence as about .50. This suggests, of course, that the tests of concrete or mechanical ability measure something that is not the same as abstract intelligence. The same results accrued in the case of *abstract* vs. *social* test correlations but Pintner does not regard these as significant because of the availability of only one test of social intelligence (Moss).

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[60] F. N. Freeman, *Mental Tests*, Houghton Mifflin Company, 1926, pp. 480–481.

[61] R. Pintner, *op. cit.*, pp. 56–62.

A few other data on this point have been reported. Stenquist[62] gives the correlations between his assembly-test results (mechanical aptitude) and intelligence-test scores as ranging from .20 to .30. These same mechanical-test scores correlated approximately .80 with school marks or teachers' estimates of quality of work in mechanical subjects. MacQuarrie[63] reports a correlation of .20 between his mechanical tests and "general" intelligence scores as compared with from .32 to .81 between mechanical-test scores and teachers' estimates of mechanical ability.

It should not be assumed from this discussion that general intelligence can only be broken down into categories such as abstract, mechanical, and social groups. In a very real sense intellectual responses are highly specific even within subgroups as represented by further subdivisions of abstract intelligence. Thus in constructing his tests, Thorndike[64] has divided abstract intelligence into subdivisions dealing with different kinds of test situations. He speaks of *C* intelligence in connection with verbal completion, *A* intelligence as ability with arithmetic situations, *V* intelligence in reference to vocabulary skills, and *D* intelligence as facility in following verbal directions. *CAVD* intelligence is then a combination of the four particular subdivisions described. This procedure agrees with Kelley's previously mentioned statistical discovery of multiple factors of intelligence within what has been called the general or *G* factor.

IV. THE INHERITANCE OF MENTAL ABILITIES

As indicated in Chap. II, very satisfactory progress has been made in penetrating the intricacies of biological inheritance. We know some things with fair definiteness in the realm of physical unit character inheritance. But when it comes to the equally important matter of the inheritance of what we commonly call "mental ability" our troubles begin; the problems involved are complex and exceedingly difficult to analyze. Even though we safeguard ourselves by positing a structural basis for the emergence of intelligence we are still confronted with the problems of the location of such structure and the question of whether even it provides an avenue for the unit character transmission of intelligence.

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[62] J. L. Stenquist, Measurements of Mechanical Ability, *Teachers College Contributions to Education*, no. 130, 1923.

[63] T. W. MacQuarrie, A Mechanical Ability Test, *Journal of Personnel Research*, 5: 329–337, 1926–1927.

[64] E. L. Thorndike, and others, *op. cit.*, pp. 65–108.

Powers and Uhl[65] state that scientific opinion leans definitely toward the belief that mental ability is inherited in the same manner as physical characteristics. This belief is apparently based on an analogy and on the assumption of a physiological basis of intelligence. Although they do not raise the question of the nature of mind, Witty and Lehman[66] have repeatedly called in question the hypothesis that mental abilities are transmitted in precisely the same manner as physical qualities. As they rightly say, no one has presented *crucial evidence* that such an hypothesis is valid. Certainly none of us would want to postulate such a moot proposition as distinct *mental genes*, at least, not if we knew anything about the composite nature of germinal, congenital, and environmental influences.

Owing probably to the ambiguity of the term "mental," the whole question of mental inheritance lends itself readily to extremes. Many apparently believe that intelligence and feeble-mindedness are Mendelian dominants and recessives respectively, and that they thus follow the regular genetic mechanisms of unit-character inheritance. The superficially studied but much advertised Jukes, Kallikak, and Edwards families are pressed into service to "prove" this contention. On the opposite extreme are those who, with Watson, assert that what a healthy infant will become intellectually depends almost exclusively on the methods of training or "synthesis of conditionings" encountered. Gilliland[67] suggests that the truth of the matter probably lies between these extremes. The physical correlates of mental ability, what and wherever they are, are inherited biologically, but the degree to which ability ultimately develops depends upon the appropriateness of the medium in which the individual grows.

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[65] F. F. Powers and W. L. Uhl, *op. cit.*, pp. 40–41.

[66] P. A. Witty and H. C. Lehman, The Instinct Hypothesis versus the Maturation Hypothesis. *Psychological Review*, 40: 33–59, 1933. Also, by the same authors, The Dogma and Biology of Human Inheritance, *American Journal of Sociology*, 35: 548–563, 1930.

[67] A. R. Gilliland, *Genetic Psychology*, Ronald Press Company, 1933, pp. 112–113.

The Structure-function Hypothesis.—The hypothesis of mental inheritance suggested by this title is one of the most intriguing and plausible proposals yet advanced. Like many other verbal solutions it works very well in one realm, but when pressed into service as an analogy it falls heir to all the strained conclusions and shortcomings common to such reasoning. The argument goes something like this: all physical structures perform functions that are germane to their mechanical make-up and degree of maturation. Birds fly with great facility for the simple reason that they possess mechanical structures admirably designed for that function, whereas man, in spite of his superior adaptability, must locomote more clumsily. Cats wander around on the crest of the back fence, but pigs find it quite impossible to do so. The reason is again appropriately designed structures. The same could be said for numerous neuromuscular functions.

So far so good, but now comes the analogy: since mental ability is a property or function of neural (particularily brain) activity, it follows that the character of mental functioning will be in direct proportion to the quality or quantity or both of the neural structure in any given case. This sounds plausible but being based on analogous reasoning it is beside the point. It may be true that good brains mean superior intelligence, but the line of reasoning just advanced does not prove that to be the case. Besides we have no positive assurance that the brain or even the whole nervous system is the exclusive seat of intelligence.

Lashley's[68] work with animals shows that even when appreciable sections of the brain proper are surgically removed well-learned functions are sometimes not even impaired. Partially learned skills are lost, but soon relearned. Similar results have accrued with humans in the case of accidents and tumor operations. Evidently, in the case of the brain at least, the alleged close relation with quantity and organization of structure does not obtain. This fact, if valid, is very damaging to closely knit theories of structure-function correlation like Thorndikes.[69] As nearly everyone knows, he differentiates between mediocre and superior intellects by assuming a concomitant difference in the *number* of neurone connections. As Thorndike puts it, "What is essential to the hypothesis (physiological parallel of mental capacity) is that by original nature, men differ in respect of the number of connections or associations with ideas which they can form, so that despite identical outside environments, some of them would have many more than others." This is a case of reasoning from structure to function, a procedure that is always hazardous in view of the fact that mental development may be due in considerable measure to factors not yet revealed by our techniques.[70]

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[68] K. S. Lashley, *Brain Mechanisms and Intelligence*, University of Chicago Press, 1929.

A good argument advanced in favor of the structure-function hypothesis is the myelinization process in nerve axons. It is known that neurons do not perform their function of transmitting energy until they are properly insulated with the fatty sheathing called myelin or medullary. According to Ladd and Woodworth,[71] nerves from one part of the brain to another become covered with this sheathing at different points in the growth process, thus bringing about a progressive development of functions. This is believed by some to be the reason for the gradual development of mental ability in the growing child. But as Ladd and Woodworth admit, this is an uncertain hypothesis. Nevertheless, as Curti[72] suggests, the maturation of neurones may be one basis for the growth, with advancing age, of ability to learn. Of course this thesis attempts to identify intelligent behavior with the activity of the nervous system largely and credits the development of ability almost exclusively to physically inherited structure. It is essentially an example of the strict "maturation" theory of development since the effects of reactions to social situations are not given much of a place in the scheme of things.

Freeman[73] has worked out a theory of the nature of intelligence based on the brain structure idea. It is the result of his search for a theory that would meet all the objections advanced against both Spearman's "two-factor" and Thorndike's "synthetic" theories, while at the same time satisfying evidence from correlations among mental and sensory skills, as well as from the facts of physiology. According to him, the association areas of the brain are probably the seat of the mental processes by which "new patterns are formed from among the data of experience." The more complex the structure of the brain, the greater the possibility of intelligent patterns of response. The brain, then, furnishes the physiological basis for the appearance of the general intelligence factor. Low correlations between abstract and sensory functions are likewise explained as a property of the relationships obtaining among particular areas of the brain.

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[69] E. L. Thorndike and others, *op. cit.*, pp. 415–432.

[70] F. L. Goodenough and J. E. Anderson, *Experimental Child Study*, D. Appleton-Century Company, Inc., 1931, pp. 23–24.

[71] G. T. Ladd and R. S. Woodworth, *Elements of Physiological Psychology*, Charles Scribner's Sons, 1915, p. 58.

[72] M. W. Curti, *op. cit.*, p. 83.

[73] F. N. Freeman, *op. cit.*, pp. 488–491.

It is not surprising that localization of mental functions in bodily structures should be attempted. Previous to the present century the learning process was hopelessly tangled in the morass of philosophical mysticism. Everything pertaining to it was "psychic," dualistic, and physiologically intangible. When William James and Thorndike lifted it out of this "mess" and attempted to associate it with definite neurological processes they certainly did psychology a great favor. Since then the temptation to localize mental functions (as properties of physiological processes) has, however, been too great to resist. And this tendency has been greatly aided and abetted by the development of a scientifically drawn monistic conception of personality.

But as time has gone on, the purely mechanistic "preformed bond" theory has spent its usefulness as a pioneer hypothesis. We are far enough along now and we have enough experimental evidence to warrant our giving up a dogmatic adherence to alleged specific structure-function relationships in the mental ability realm. Psychologists are gradually turning toward organismic views which stress the development of adaptive behavior from a configurational and relative point of view. We recognize that in the neuro-muscular realm structure and function are concomitants, also that intelligence (as adaptive responses to problem situations) must have a physiological basis, but we cannot be sure that biological and psychological (intellectual) processes are related to each other as specific structure and function coordinates.

The Physiological Basis of Mind.—Modern scholars were not the first to seek the physical habitat of mind. As Roback[74] shows in his historical review of character psychology, the ancients attempted to localize it in all parts of the vicera, not to mention the head. We still hear reverberations of "anatomical" character and temperament in such expressions as "religion of the heart," "a bilious disposition," and "intestinal fortitude." To critical students of personality these expressions are mere figures of speech, but the average individual usually takes them very seriously.

Modern attempts to find a physiological basis for mental processes have in the main taken the four following trends: (1) That intelligence is dependent upon richness (quality and quantity) of neurone patterns in the higher cortical areas. This is essentially the view advanced by Freeman (page 108) and can be used to buttress theories of the Mendelian inheritance of both superior intelligence and feeble-mindedness. (2) That in addition to the above, intelligence is contingent upon the modifiability of the nervous system with special reference to readiness for connection making at the synapse. This view is illustrated by Thorndike's previously mentioned "connection" theory (page 101). (3) That intelligence is dependent, in addition to both of the above, upon a satisfactory functioning of and fine balance among endocrine glands such as the thyroid, adrenal, pituitary, and related structures. Legitimate endocrinologists have offered much positive evidence in this field. (4) That intelligence is a biological function, not only of the action of the brain or the nervous system, but of the organism as a whole including brain, nervous system, glands and muscles—in short, of the composite, integrated action of the total organism. This view is the one that is growing in popularity at the present time. It is based upon a monistic philosophy, an organismic psychology, and a vital, adjustment type of sociology. It is by no means the invention or the exclusive property of the *Gestalt Theorie.*

Persistent attempts to find the localized physical basis of intellect have not been wanting. As students of psychological literature know, they have been concerned with structural characteristics such as height, weight, anatomical development, dentition, body contour, and convolutions of the head. After reviewing a large number of these studies, Paterson[75] concludes that the evidences "are in direct opposition to the views of those who hold that mind and body are so intimately interrelated that every aspect of mind and every feature of the body must be regarded as part of a functional unity." This does not mean that intelligence is not a functional property of physiological action, but rather that the physical basis for such functioning has not yet been localized and perhaps never will be in such a highly coordinated physological unit as the human personality.

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[74] A. A. Roback, *The Psychology of Character,* Harcourt, Brace & Company, 1927, Chap. 3.

Another summary of statistical studies of correlations between aspects of physical and mental growth by Gates[76] reveals the same lack of relationship between physiological characteristics and intellectual ability. The highest relationship found was Baldwin and Stecher's figure of .53 between mental age and bodily height. Incidentally this figure, when translated into a coefficient of alienation, has a predictive value of only 13.4 per cent more than chance. In a résumé of the status of this problem, Karl Pearson[77] some years ago declared that "when we come . . . to associate mental and bodily characters, we find no correlation whatever of prognostic value. . . . It is, however, too early yet to assert that no measure of bodily functioning will turn out to be of service in diagnosing intelligence. Men of science will continue to inquire, but thus far our only answer can be that to predict intelligence of an individual you must test it directly, or measure it in the immediate ancestors of the individual."

The Concept of "Personal" Growth.—The proposal subsumed under the forgoing title is one of the most optimistic and intriguing in all personality study, albeit it is fraught with considerable conjecture. It certainly warrants a careful hearing but should be interpreted with caution. However, this is probably true of nearly all important psychological issues. They frequently offer considerable tangible experimental data germane to a solution, but these are usually interpreted by workers in a way calculated to substantiate their previously established views.

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[75] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, p. 158.

[76] A. I. Gates, The Nature and Educational Significance of Physical Status and of Mental, Social, and Emotional Maturity, *Journal of Educational Psychology*, 15: 329–358, 1924.

[77] K. Pearson, On Our Present Knowledge of the Relationship of Mind and Body, *Annals of Eugenics*, University of Cambridge Press, 1: 382–407, 1925–1926.

Thus far in our discussion of the structure-function problem, we have indicated that the present trend is toward a belief in intelligence as a unified reaction of the organism-as-a-whole but toward a search for the physical location of strictly mental activities as well. This search for a concrete place of mental activity registration has not netted us much more than microscopic results and thus reminds us somewhat of the blind man in a dark cellar who was searching for a black cat that wasn't there!

Morrison[78] has taken a lively interest in this problem and offers a solution that bids fair to synchronize with such evidence as is extant on the subject. He makes a clear-cut distinction between what he calls *organic* adaptive capacity and *personal* adaptive capacity. By the former he means overt motor responses that animal and human individuals make to concrete situations requiring action. By "personal" adaptive capacity he has reference to the more intellectual adaptations that educated people make to problem situations. One is a function of the physical organism itself as an adjustive instrument while the other is a function exclusively of the human educated *personality.* And by personality Morrison means the welter of cultural, intellectual, and appreciation learnings that the individual has accumulated in the complex maelstrom of personal experience. He does not include the adaptive organism itself in his definition of personality.

Concepts like these call for illumination by way of illustrations. Perhaps we can do no better than to use the author's own examples. He tells of a clever "hand-organ" monkey who, becoming annoyed at a near-by dog, selected a suitable stone and proceeded to heave it at the object of his irritation, much to the latter's discomfiture. This was a reaction of the adaptive organism to a concrete stimulating situation and was obviously a function of the physical organism. It was *clever* but not necessarily *intelligent.* Morrison reserves the latter term for what he calls *personal* adaptations—the human intellectual insights which accrue with directed experience. And here it should be said that while the responses of the adaptive organism are purely physiological, those of personality—the personal learnings and adaptations—are not so (physiologically) localized or circumscribed. To illustrate: While the monkey was able to remove his strains and stresses by shying a rock at the hapless dog, he could not—because of the absence of intellectual learnings requiring a prolonged education—have "equipped himself with a handy bow-and-arrow or automatic pistol" in order to cope with dogs. As Morrison says, "These things require learning of the order of which Man is capable; they require cultural accumulation and *personal* learning" (page 105). Again, the pharmacist can give an intelligent response to a situation requiring the compounding of a prescription because he possesses those purely personal accretions of learning which make such a task possible.

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[78] H. C. Morrison, *op. cit.*, pp. 103–107.

As will come out in more detail later, these personal learnings, which are regarded as the essence of personality, are not thought of as being definitely localized either in the brain or in any other part of the physical organism.

Kantor,[79] in his discussion of the nature of mind, substantiates this view. As he puts it, the individual from his earliest days makes constant responses to his social milieu, thus acquiring a myriad of psychological learnings. The summation of all these constitutes the human mind. Incidentally, this mind is not to be thought of as substance, quality, or even biological processes; it is *psychological*—an accumulation of personal learnings. And, like Morrison's personal learnings, these, although originating in biological processes, are subsequently not stored in the brain as so-called neural patterns. In this sense, it is incongrous to speak of "educating our brain."

Evidence for Nonlocalization of Personal Learning.—Important evidence on the localization problem is involved in Child's[80] concept of "physiological gradients." As most students understand it, this gradient has reference to a progressively decreasing rate of metabolic activity from the brain down (also outward) to the sacral region of the trunk. The brain or crest of the gradient is dominant in its biological influence because of the presence there of the highest rate of metabolism. The brain is thus in the ascendency in the sense that it gives direction to all physical (overt) adaptive responses. But according to Morrison[81] this is about as far as it goes. This dominance is not in the form of a storehouse of energy, or, more important for our point, *it is not a depository for intellectual learnings conceived as neural patterns.* As he says further, organic activity is certainly involved when we originate thoughts and ideas but subsequently, as the *products* of organic processes, they become part of the accrued personality and are no longer to be thought of as retained neural patterns in the brain.

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[79] J. R. Kantor, The Evolution of Mind, *Psychological Review*, 42: 445–465, 1935.

[80] C. M. Child, *Physiological Foundations of Behavior*, Henry Holt & Company, 1924.

In this connection, we naturally recall the work of Franz[82] and Lashley.[83] In the main, their task was to study the effects on already learned skills, such as maze running and puzzle-box escape, of the surgical removal of selected parts of an animal's cerebrum. It is generally known now that, as a rule, the more recent and less thoroughly learned neuromuscular skills were lost when the frontal lobe, for example, was removed. But the older and more habitual learnings were not lost. Now the cortical area removed must have been concerned in the learning of the newer skills since they (the skills) were lost with the operation. Yet, the older and more thorough learnings survived the loss of cortical matter concerned with their original development.

As far as these experiments with the particular animals in question are concerned, we could consistently reason that after the mastery of motor learnings has been accomplished, the cortex at least is not concerned in the retention of such modifications as have been registered by experience. Colleagues of the writer have suggested that the muscular structures concerned with the execution of the skills themselves may retain the previously exercised reactions. Be that as it may, we still do not have much ground to stand on in the quest for brain localization.

Of course, the investigations of the physiologists mentioned, especially Lashley, have gone into much greater detail than the general illustration given suggests. The interested student should study them thoughtfully. But even more interesting than these findings are those concerned with human subjects.

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[81] H. C. Morrison, *op. cit.*, pp. 133–137.

[82] S. I. Franz, On the Functions of the Cerebrum: The Occipital Lobes, Psychological Monographs, vol. 13, 1911.

[83] K. S. Lashley, *op. cit.*

In connection with accidents, and especially with the removal of brain tumors, surgeons have been obliged to cut away large sections of the brain proper. There is the work of Dr. Dandy,[84] who has in at least one case removed all of the right hemisphere, both frontal lobes, the left occipital and the lower half of the left temporal. Contrary to popular belief, this operation did not result in the loss of the patient's intellectual learnings; in fact, he was orientated as to time, place, and identity, his memory was undisturbed, and he was still fluent with reading, writing, and arithmetic skills. Of course, this patient and others suffered such organic disturbances as brain surgery would naturally cause in the form of body paralysis and loss of sensory and motor functions. But this evidence is not very favorable to the theory of cortical localization of neural patterns.

While working out his researches touching on *progressive relaxation,* Jacobson[85] discovered among other things the significant fact that activity of an individual's vocal apparatus is apparently essential to the entertainment of thoughts in the form of words. In substance he found that as his subjects succeeded in relaxing their vocal cords they experienced a concomitant dimunition in mental content. Jacobson's practical conclusion, like Watson's theoretical one, was that thought is after all subvocal speech in the sense that it is dependent for its appearance as an implicit experience upon activity of the muscles of the throat. This finding is somewhat disturbing to the thesis of cortical localization of mental life and suggests a diffused organismic background for verbal learning.

In summing up the evidence on this point, Lashley[86] makes it clear that we have no crucial evidence for a mechanistic theory of localized neural "connection" learning. In fact he thinks that psychological learning is the major factor in the matter. To quote him: "Psychology is today a more fundamental science than neurophysiology. By this I mean that the latter offers few principles from which we may predict or define the normal organization of behavior, whereas the study of psychological processes furnishes a mass of factual material to which the laws of nervous action must conform." Lashley might well have added that since psychological processes are more closely identified with intellectual growth than are neural processes, we should be cautious about assuming a strict biologically inherited basis for intelligence.

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[84] W. E. Dandy, Removal of Right Cerebral Hemisphere for Certain Tumors with Hemiplegia, *Journal of American Medical Association,* 90: 823–825, 1928.

[85] E. Jacobson, *Progressive Relaxation,* University of Chicago Press, 1929, Chap. 10.

[86] K. S. Lashley, Basic Neural Mechanisms in Behavior, *Psychological Review,* 37: 24, 1930.

The Mental-age Controversy.—The concept of mental age, which we have become accustomed to think of as impeccable in principle and practice, is far from being free from the controversy over localization. In evaluating it, everything depends on whether we regard abstract learning as the natural function of a maturing brain and nervous system or as a sequence of "personal" intellectual adaptations arising in neural and possibly other organic processes, but relatively independent of the degree of organic maturation attained.

In psychological literature, mental age has reference to a child's intelligence-test score as compared to the standard norms for children in general who have presumably encountered much the same background as far as opportunity to become familiar with the test items involved is concerned. We say that the child is typical of those of his chronological age or perhaps that he is a certain number of months or years above or below the norm for his age. In this way we measure quantitatively the individual's mental age. For those who believe that intelligence is some innate, biologically inherited capacity definitely correlated with quantitatively and qualitatively adequate neural structure there is little need for worrying much about a community of environmental background for all test candidates, since such a premise tacitly assumes that, barring extreme obstacles, "genius will out," meaning that bright children axiomatically tend to pick up needed intelligence-test information as a matter of course. To those who realize that children can hardly come in possession of substantial knowledge unless they are duly exposed to it, such items as language background, socioeconomic home conditions, and comparable formal schooling opportunities loom large in importance.

Now that the original excitement incidental to the introduction of the objective testing movement has died down we have come to realize that each group ought logically to have its own norms and that a given individual's score should be compared with the standards for his own group. This point was brought home forcibly when the army test data indicated the incongruity of comparing soldiers with Terman's California children. It is also illustrated by reference to Gordon's[87] famous study of the intelligence of canalboat children in which the I.Q.'s of unschooled children declined progressively as chronological age increased. Rather than conclude that underprivileged children gradually become feebleminded with age we certainly prefer to believe that their I.Q. scores nose-dived because of impoverished opportunities along scholastic and normal social-intercourse lines.

In short, mental-age and I.Q. scores depend in the upper brackets of the tests at least upon schooling or its equivalent. Knowledge is not innate, no matter how great one's heritage; it has to be encountered and reacted to. Furthermore, it has been learned that in computing test scores allowance must frequently be made for the effects of coaching[88] and for such factors as emotional status,[89] lack of cooperation on the part of the testee,[90] and language handicap.[91]

Mental Age and Theories of Mind.—To return to the controversy over the concept of mental age. If we are intrepid enough to believe that mind is the direct correlate of an organ, it becomes encumbent upon us to think of mental age at any point as a stage of mental maturity comparable to the degree of physical maturation attained by the organ designated. This way assimilation of experience can only progress in proportion to the so-called "growth" of the mind (as dependent on an organ). This view is analogous to known facts regarding the gradual maturation of physical features such as height, weight, ossification of bones, and the nature of the growth of glandular structures. However, it minimizes the influences of experience and puts mind on a physiologically localized basis. Considerable evidence has already been marshaled in the present chapter touching on the precariousness of the latter position. In addition, it has been indicated that there are only slightly positive and chance correlations between degrees of mental and physical growth.

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[87] H. Gordon, Mental and Scholastic Tests Among Retarded Children, *Bureau of Education, Educational Pamphlets* (London), no. 44, 1923.

[88] H. S. Chen, The Comparative Coachability of Certain Types of Intelligence Tests, *Teachers College Contributions to Education*, no. 338, 1928.

[89] E. L. Schott, Variability of Mental Ratings in Retests of Neuropsychiatric Cases, *American Journal of Psychiatry*, 10: 213–228, 1930.

[90] F. L. Wells and C. M. Kelley, Intelligence and Psychosis, *American Journal of Insanity*, 77: 17–45, 1920.

[91] E. L. Thorndike, Measurement of Intelligence: The Present Status, *Psychological Record*, 31: 219–252, 1924.

The other alternative is to regard mental age at any point on the chronological scale as the end product and accumulation of all personal or experiential learnings of the kind concerned in mental tests. This view permits the belief that under extremely favorable conditions a child's mental growth might be stimulated far beyond the limits supposedly set by the process of organic maturation. It harmonizes with important data (to be presented later) relating to the possibility of raising the I.Q. under certain select conditions of nurture. It indicates that a child's "mind" (as psychological development) might be more mature than we think at the onset, for example, of the teens. Observed social and intellectual immaturity would, on this thesis, be due to paucity of experience. Furthermore, there would be no direct causal connection between psychological (personal) and physiological growth. Psychological development would proceed as social and scholastic opportunities permitted and physical growth would go forward as the individual grew older and responded to the environmental field. Thus mental age would be determined, in large part at least, by opportunity and might conceivably be greatly accelerated by such systematic instruction as Morrison[92] presents with such devastating logic in his treatise on the subject.

In all fairness, it should be mentioned that the above position is frequently embarrassed by evidence practically proving the impossibility of raising the mental age or I.Q. of many individuals, no matter how favorable and stimulating the conditions of nurture,[93] and these individuals are by no means always defective (as can be ascertained) cortically or otherwise.

Constancy of the Intelligence Quotient.—Most of the early studies of intellectual growth indicated that the I.Q. of a given individual tends to remain relatively stable from year to year. These findings led gradually to the belief that amount of intelligence is proportional to chronological age (up to a certain point) and that it is predetermined by *hereditary* forces. Many concluded that constancy was inherent in the I.Q.; that constancy was its fundamental characteristic. They regarded individual differences in mental test scores as primarily differences in degree of mental maturation. On this basis, it is obvious that the educability of the personality would be rather definitely circumscribed by such limits as were set by inheritance.

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[92] H. C. Morrison, *The Practice of Teaching in the Secondary School*, University of Chicago Press, 1931.

[93] See, for example, C. Bassett, *The School and Mental Health*, The Commonwealth Fund, 1931, pp. 27–28.

This is the view that prevailed until recent disclosures of the modifiability of the I.Q. and is obviously consonant with the organic conception of mind. It is the position that has been so tenaciously held by Terman and his Stanford associates for many years. After acknowledging that some of his gifted children did show very marked changes in I.Q., Terman[94] in a recent publication, still insisted that "Some of those changes have been in the direction of I.Q. increase, others of them in the direction of decrease. The important fact which seems to have been definitely established is that there sometimes occur genuine changes in the rate of intellectual growth which cannot be accounted for on the basis of general health, educational opportunity, or other environmental influences."

The above conclusion may be true, but we have recently witnessed an accumulation of substantial evidence very damaging to the position that mental growth is strictly a maturation process relatively independent of environmental influences. As a number of psychologists have maintained, the constancy of the I.Q. does not prove hereditary predetermination, since a relatively uniform environment would also tend to make for constancy. This is true unless it can be shown that the I.Q. is not affected by changes in environment. Freeman[95] has summarized the logic of this argument in the following words: "Constancy in the I.Q. would only be evidence that the I.Q. is determined by heredity if the environment fluctuated enough to lead us to expect marked fluctuation in the I.Q. It is probably more common for the environment of the child to be relatively constant throughout his school career. If this is true, constancy of the I.Q. might merely reflect constancy instead of the effect of the environment." As evidence, to be presented in brief here and in more detail later, shows, the I.Q. does fluctuate noticeably with marked and prolonged changes in the environment.

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[94] L. M. Terman, *Genetic Studies of Genius*, Vol. 3. Stanford University Press, 1930, p. 477.

[95] F. N. Freeman, The Effect of Environment on Intelligence, *School and Society*, 31: 623–631, 1930.

Measures of Variation in I.Q.—Before turning to an examination of evidence relating to the influence of environmental factors on mental test results it is probably best that we acquaint ourselves with such data as portray the typical fluctuations in I.Q. scores. The scores of practically all individuals fluctuate when repeated retests are given but the variations are centralized enough to be regarded as relatively constant. In summarizing the tendencies in this respect Schwesinger[96] states that "In general, *i.e.*, for about half the cases, the I.Q. can be expected to vary up or down from zero to five points, from test to retest, for any individual. For a few cases it will vary more; for a few cases, less. The range of variation is from zero to about twenty points. Deviations are significant above ten points, which happens for about twenty per cent of the cases." Much the same span of variation is reported by Hollowell[97] in the case of children between ages three years and forty-seven months. The figures for variation as indicated by several important studies are summed up in Table 2.

As these and other investigations show, when successive I.Q.'s are correlated, the coefficients range from approximately .80 to .95, the figures depending to quite an extent on the homogeneity of the groups concerned in the testing. These figures hold for the most part even when the groups tested are subdivided into ability groups. Of course, the scores of superior and older children are significantly affected by the fact of test-material limitations in the upper levels of the Stanford-Binet scale.

The causes for these apparently inevitable variations in I.Q. scores have been aptly summarized[98] as follows: (1) clerical errors of estimate (rare); (2) degree of rapport between subject and examiner (rare); (3) coaching effects (rather slight); (4) fluctuations in interest and effort (usually rather slight); (5) abnormal physical conditions (somewhat overemphasized); (6) language handicaps (especially with dull children); (7) change in examiner from one test to another; (8) marginal successes and failures (on the all or none tests such as the Civil War code); (9) limitations inherent in the standardization of the tests (for instance, relatively greater ease of the tests for the lower ages).

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[96] G. C. Schwesinger, *op. cit.*, p. 52. Quoted by permission of the publisher.

[97] D. K. Hollowell, Stability of Mental Test Ratings for Preschool Children, *Journal of Genetic Psychology*, 40: 406–421, 1932.

[98] G. C. Schwesinger, *op. cit.*, pp. 54–55.

TABLE 2.—VARIATIONS IN I.Q. SCORES ON RETESTINGS AS FOUND IN FOUR STUDIES*

Author	Number of Cases	Percentage Differing 10 Points or More	Limits of Middle 50 Per Cent	Average Change	Coefficient of Correlation between Two Tests
Terman	435	0.15	−3.3 to +5.7	4.5	.93
Rugg and Colloton	137	0.12	−2.3 to +5.6	4.7	.84
Garrison	468	0.085	−2.0 to +4.0 −3.0 to +4.0 −3.0 to +5.0	5.4	.88
Rugg, L. S.	114	.....	−1.2 to +1.9	3.1	.95

* Adapted from F. N. Freeman, *Mental Tests*, Houghton Mifflin Company, 1926, p. 345.

In his résumé of constancy studies utilizing group tests of intelligence, Pintner[99] found variations much similar to those obtaining for the Stanford-Binet tests (as shown above).

Influence of the Environment on I.Q.—Evidence favorable to the thesis that the I.Q. may be influenced for weal or for woe by the kind of environmental experiences encountered is not hard to find. In fact, we meet it everywhere in the more recent literature. A few studies will be mentioned here briefly for the purpose of showing the status of the theory that mental age and I.Q. represent stages of intellectual maturity resulting from personal experience as made possible by the social milieu.

First we might mention again the study of which environmentalists are so fond—the investigation of English canalboat and gypsy children by Gordon. Among the canalboat children it seems that the average I.Q. for those under six years of age was from 90 to 100, whereas those over nine averaged less than 70. In the meantime, those of school age had been attending school only 5 per cent of the normal time. Since the older siblings were so much more retarded than the younger ones with the resulting progressive deterioration of test intelligence with age, it is natural that Gordon should conclude that mental tests do not measure native ability apart from environmental opportunities, especially such advantages as schooling or its equivalent. He found a correlation, between age and I.Q., of −.755 ± .033. In the case of gypsy children, who had enjoyed 35 per cent of the usual school experience, the correlation was not quite so negatively high, being −.566.

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[99] R. PINTNER, *op. cit.*, p. 90.

A recent study by Jordan,[100] in which he tested more than 1,200 school children, ranging from grades one to seven with tests of abstract intelligence, indicated that children coming from inferior homes but who tested normal at the beginning of their school careers, tended to decline in test scores to the level of "dullards" by the age of thirteen.

Stroud[101] reports an investigation in which mental tests were given to 1,079 public school children in a certain primitive district in the Blue Ridge Mountains. These pupils ranged from grades one to eight. Stroud found that whereas the average I.Q. for the first graders was 90, that for sixth, seventh, and eighth graders was in the low 70's. In fact, he found that the average I.Q. became progressively less with each higher grade. In harmony with these data, Nietz[102] found that formal schooling increased the mental test scores of pupils from backward mountainous regions. After one year (in some cases longer) of high-school experience, a group of Tennessee pupils from secluded sections raised their mental ratings from the borderline classification to a normal status.

On the basis of these findings, the inference is usually drawn that intellectual ability as portrayed by mental-test scores, instead of being strictly germinally or organically determined, represents to a considerable extent the causal aftermath of favorable environmental conditions, especially those conducive to the learning of the subject matter incorporated in mental tests. Those who hold this view are naturally very optimistic about the educability of mankind and think of personal achievement as being retarded largely by obstacles in the social surroundings of a given individual. Their enthusiasm is likely, however, to carry them beyond the testimony of the data from which they originally drew their conclusions.

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[100] A. M. Jordan, Parental Occupations and Children's Intelligence Scores, *Journal of Applied Psychology*, 17: 103–119, 1933.

[101] J. B. Stroud, *Educational Psychology*, The Macmillan Company, 1935, pp. 252–253.

[102] J. A. Nietz, What Does the Terman Group Test of Mental Ability Measure? *University of Pittsburgh, School of Education Journal*, January–February, 1928.

It is probably true that the early studies on constancy were not always critically made or analyzed but the same may be true to some extent of the more recent contributions on the subject. For example, many of them appear to come to conclusions from measurements of different children at different age and grade levels. As we have known for years, this is not a sound procedure. It is gratifying to learn that the intellectual component in human personality is amenable to the effects of improved social conditions, but we must guard against becoming so cocksure of our evidence in the matter that we exceed the bounds of known knowledge.

The Inheritance of Mental Ability.—In coming to conclusions about the relative efficacy of inheritance and experience as determiners of intellectual status, it might be well to do as we did in our earlier discussion of a similar problem (Chap. II), *i.e.*, admit that neither factor can possibly be conceived as being independent of the other or as having a separate existence. Here as before, the two influences early become interlocked into one composite in which one has no significance except as it is related to the other in the union. Heredity gives us the adaptive organism which is certainly influential in determining what potential heights may ultimately be reached, while the nature of environmental forces encountered must obviously go a long way in determining the degree to which intellectual possibilities will be realized. But in the end we can not single out the relative influence of one as over against the other since, except in the case of identical twins, we have no controls and the two do not exist independently.

Sometimes, as the Stanford psychologists have shown, the most favorable opportunities have little effect on test scores, while in other cases, as such environmentalists as Bagley and

Morrison have indicated (usually from the researches of others), I.Q.'s have been raised appreciably by stimulating social and educational opportunities.

Whether intelligence as a primary factor in personality is to be conceived of as the product of personal experience and systematic education, or as organism (mental) maturation as predetermined by germinal factors, or as an inseparable combination of both, is up to the reader. Manifestly, there can ultimately be only one true answer, but in the light of present knowledge, yes, and of lack of knowledge, it seems best not to take a dogmatic stand that forces one into the embarrassing position of attempting to rationalize all data in favor of an a priori view. There is sufficient evidence at hand to indicate that normal man is highly amenable to the educative influences of what we can agree upon as favorable opportunities. Be the arguments what they may, man can learn and improve his intellectual status by opportunity and industry. In short, the human personality is highly educable.

Questions for Stimulating Thought and Discussion

1. What fundamental fallacies are involved when nature-nurture studies are attempted with children who are already from one to four years of age? How, if at all, can this handicap be overcome?
2. What logical criticisms can one make of the dictum that mental tests measure native ability? And since all responses made to mental-test situations are obviously learned, how can we compare the basic differences obtaining among individuals? What bearing do these questions have on the educability of man?
3. Is a settlement of the question of whether the human organism is ultimately single or double properly a psychological or a philosophical matter? Can the issue be decided by experimentation or is it a matter of arbitrary determination?
4. Do monistic psychologists deny the existence of disembodied "mind" or "spirit" or do they merely sidestep the issue by making material behavior alone the object of their study? Why did you answer as you did?
5. What are the objections to the older mind theories from a strict scientific natural-causation point of view? Why would conservative theologians, for example, take decided exception to scientific interpretations of the nature of mind?
6. On what grounds do materialistic psychologists dispense with choice, purpose, planning, and teleological concepts in general? Can a desirable theory of strictly monistic personality be constructed? How would this be done?

7. Contrast the definitions that dualistic and monistic psychologists would likely offer for the intellectual component of personality. Would either group necessarily regard intelligence as a function of localized neural activity?
8. Which of Pintner's fivefold conceptions of intelligence appears to be most acceptable from a scientific point of view? Prepare a defense of your position that would be acceptable to a modern psychologist. Why did you choose it in preference to the others?
9. Just why is the two-factor theory of the nature of intelligence so distasteful to followers of the Thorndike school of thought? Give the precise pro and con arguments in your answer. Do factorial analyses such as those by Kelley and Thurstone tend to corroborate Thorndike's or Spearman's position?
10. Does evidence from physiological psychology that appears to be distinctly disparaging to the notion of "localized mind" also militate against the thesis of gene inheritance of mental ability? Support your answer. In case you object to the so-called "dogma of mental inheritance," how do you account for the obvious intellectual differences among individuals?
11. What are the chief objections to the idea of intellectual status as an accumulation of psychological learnings or "personal accretions," all of which are relatively independent of the quality or quantity of cortical neural structure? Can such a position square with neurological conceptions of the nature of learning?
12. In view of the fact that intelligence tests are often contrasted with personality inventories, how can we justify the practice of including intelligence as a component of personality? Is intelligence a major personality "trait"? Take a position on this question and defend it.

Recommended Readings

Bode, B. H.: *Conflicting Psychologies of Learning,* Boston: D. C. Heath & Company, 1929, Chaps. 1–3, 5.

Dearborn, W. F.: *Intelligence Tests,* Boston: Houghton Mifflin Company, 1928, Chap. 4.

Freeman, F. N.: *Mental Tests,* Boston: Houghton Mifflin Company, 1926, Chap. 18.

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Gray, J. S.: *Psychological Foundations of Education,* New York: American Book Company, 1935, Chaps. 1, 2.

Kantor, J. R.: The Evolution of Mind, *Psychological Review,* 42: 455–465, 1935.

Lashley, K. S.: *Brain Mechanisms and Intelligence,* Chicago: University of Chicago Press, 1929.

Lashley, K. S.: Basic Neural Mechanisms in Behavior, *Psychological Review,* 37: 1–24, 1930.

Morrison, H. C.: *Basic Principles in Education*, Boston: Houghton Mifflin Company, 1934, Chaps. 5, 7, 11.

Moss, F. A., and T. H. Hunt: *Foundations of Abnormal Psychology*, New York: Prentice-Hall, Inc., 1932, Chap. 1.

Nemzek, C. L.: The Constancy of the I.Q. *Psychological Bulletin*, 30: 143–168, 1933.

Pintner, R.: *Intelligence Testing*, New York: Henry Holt & Company, 1931, Chap. 4.

Schwesinger, G. C.: *Heredity and Environment*, New York: The Macmillan Company, 1933, pp. 9–22, 51–56.

Spearman, C.: *The Nature of "Intelligence" and the Principles of Cognition*, New York: The Macmillan Company, 1923.

CHAPTER IV

EDUCABILITY OF THE PERSONALITY: II. THE INFLUENCE OF FAVORABLE OPPORTUNITY UPON INTELLECTUAL STATUS

The nature-nurture question seems to resist solution about as stubbornly as any problem in the entire field of human psychology. According to evidence presented in the previous chapter the traditional emphasis has been mainly on the side of nature. This has been particularly true with reference to the concept of intelligence because of a wealth of data tending to demonstrate the stability of the I.Q. and the progressive nature of mental maturation. But, as has also been indicated, there is a mounting body of tangible evidence pointing toward the potency of favorable educational influences as determiners of intellectual status. To the student of personality, this evidence, no matter how microscopic, is of prime importance since it suggests the extent of possible personality improvement through an intelligently planned environmental program. The present chapter is thus devoted to a presentation and interpretation of such studies as throw further light on the important problem of the intellectual improvability or educability of men.

Before presenting the contributions that have been made to the problem of environmental efficacy by the more modern and critically planned investigations, it is probably best that we orient the reader by giving a brief account of some of the earlier studies which were once thought to have settled the question of relative nature-nurture potency. Although the conclusions drawn from these investigations have been largely discredited, at least by ardent environmentalists, it should be realized that the projects themselves were originally carried out in the spirit of scientific inquiry and on the basis of such approved techniques as were then available. Since that time we have, however, developed better methods of factor control, more reliable instruments of measurement, a keener sense of the complexity of the problem, and much more caution in the interpretation of data. Thus, the more critical nature of our recent studies should be evident as the treatment progresses.

I. THE OLDER STUDIES OF HEREDITY

Evidence from Geneological Studies.—Sir Francis Galton[1] was one of the first to attack the nature-nurture problem in a scientific manner. In his famous study *Hereditary Genius*, he examined carefully the careers of 977 men of genius, each at least as eminent (intellectually) as one in 4,000. In order to effect a control, he compared these with the careers of an equal number of men (977) of only average ability but of the same social rank. Galton figured that if nurture was as strong as nature the proportion of eminent relatives between the groups would be approximately equal since they both enjoyed the same high social standing in England. He found, that, all told, the first group included 89 fathers, 114 brothers, 129 sons, 52 grandfathers, 37 grandsons, 53 uncles, and 61 nephews—a total of 535 relatives of eminence. In contrast, the control group enjoyed but four eminent relatives.

Galton contended that the concentration of genius in closely related families proved the hereditary nature of high intelligence. Like many others of his day, he reasoned that genius would inevitably overcome all social obstacles. This type of reasoning is likely to move in a circle by first ascribing eminence coming from favored families to heredity and then contending that even when it comes from unfavored sources it is still biologically inherited in the mutational sense. By this process, environment cannot possibly get into the picture. The possibility that the truly effective elements (for intellectual stimulus) of environment may often be lacking in socially and economically favored families while sometimes present in more socially inferior homes, is not reckoned with sufficiently.

In his study of European royalty, Woods[2] came to much the same conclusion. After examining carefully the pedigrees of 671 individuals of royal blood, he rated them as to intellect and morality on a scale of from 1 to 10. In essence, he found that persons of outstanding achievement were clustered in a few prominent families instead of being equally distributed throughout all the royal lines. Since he had secured quite complete accounts of each individual's background and since the families involved were usually large and always socially prominent, Woods concluded that mental and moral excellency were biologically inherited. To use his own words, "The upshot of it all is that as regards intellectual life, environment is a totally inadequate explanation" (page 266).

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[1] F. Galton, *Hereditary Genius*, The Macmillan Company, 1869.

[2] F. A. Woods, *Mental and Moral Heredity in Royalty*, Henry Holt & Company, 1906.

The weaknesses of this study are similar to those in Galton's work. Neither appeared to understand the nature of environmental influences, and neither seemed to realize that the appearance of genius in families could just as logically be ascribed, to some extent at least, to superior opportunities as to germinal transmission. Woods assumed that because his royal objects of study all enjoyed socially and economically favored surroundings they lived in a good environment, yet he admits that some of the homes studied were characterized by licentiousness, stupidity, drunkenness, and immorality. Our present conception of critical study would surely dictate a more meticulous conception of environmental influence than the one adopted by Woods.

Inferences from Family Histories.—A brief consideration of some of the well-known infamous families is interesting in this connection. Probably the best known is the Kallikak family studied by Goddard.[3] According to the story, Martin Kallikak (a fictitious name taken from two Greek words meaning *good* and *bad*), a Revolutionary War soldier, cohabited with a supposedly feeble-minded tavern girl. By 1914, there were 480 known decendents of this union, among whom were 36 illegitimate offspring, 33 prostitutes, 24 alcoholics, 8 keepers of brothels, 143 feeble-minded, 3 epileptics, and 46 normals (as reported). In a later union with a girl of good family, young Kallikak became the progenitor of 496 descendants, none of whom were said to be feeble-minded or criminally inclined and only four of whom were defective—two alcoholics, one sexually immoral, and one a case of religious mania.

From these rather loosely studied data, the inference is usually drawn that feeble-mindedness at least is definitely inherited since it appears to run riot in families. It should be noticed, however, that in studies of this kind intelligence and feeble-mindedness are inferred rather than measured, also that highly unfavorable social surroundings are assigned no influence in the production of inferior personalities. Furthermore, according to our present knowledge of paired gene inheritance, indicating the dominance of superior characters, even if the girl in question were feeble-minded the offspring would tend to resemble the intellectually superior father rather than the defective mother. But if the children were reared by the mother they would naturally tend to gravitate toward others of her social class, thus registering in their own development the undesirable effects of such an environment. With such an acceleration of social and moral inferiority the environment would loom large as a determiner of inferred defectiveness.

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[3] H. H. Goddard, *The Kallikak Family*, The Macmillan Company, 1912.

There are other studies of the kind exemplified by the Kallikaks. They generally come to the same definite conclusions concerning the inheritance of intelligence. For some reason, they failed uniformly to take cognizance of nurture. Thus their testimony must of necessity be regarded as incomplete, as premature. There is the early investigation of the Jukes family by Dugdale[4] which was subsequently brought down to 1915 by Estabrook.[5] It was estimated that this degenerate line has cost taxpayers in the various communities concerned something like $2,500,000. They are alleged to have been habitual inmates of jails, penitentiaries, and institutions for defectives.

Another, but more savory, double marriage gallery is the one studied by Winship.[6] He tells of the heritages of the two marriages contracted by Richard Edwards, grandfather of the celebrated New England divine, Jonathan Edwards. As the story goes, Richard first married the beautiful but capricious Elizabeth Tuttle. Later, after divorcing her because of adultery and other indiscretions, he married Mary Talcott, a woman of ordinary ability and personality. According to Winship's tabulations, while all the progeny of the second and more conservative marriage turned out to be mediocre intellectually, the descendants of the union with the brilliant Elizabeth represent a veritable galaxy of intellectuals, including Jonathan himself,

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[4] R. L. Dugdale, *The Jukes*, G. P. Putnam's Sons, 1877.

[5] A. H. Estabrook, *The Jukes in* 1915, Carnegie Institution, 1916.

[6] A. E. Winship, *Jukes-Edwards*, Meyers, 1900.

14 college presidents, and more than 100 college professors. This study made a profound impression on early students of eugenics (1900) and was probably influential in stimulating the production of such highly speculative hereditarian writings as those, for example, by Wiggam.[7]

Early Studies of Environmental Influence.—Lest it be thought that all the pioneer nature-nurture researches pointed to the superior influence of heredity, we shall present briefly early studies testifying to the stimulating effects of favorable opportunities. These studies are heir to the same tacit assumptions and inadequate controls inherent in the genealogical investigations just reported, but they do serve to present general evidence for the other side of the controversy.

Odin,[8] in 1895, made a serious attempt to discern the environmental conditions under which French men of eminence were reared. He studied such factors as family, social traditions, intellectual opportunities, facilities for research, amount of travel enjoyed, and religious beliefs encountered. Odin found that some of these influences were quite closely associated with eminence. For instance, men of letters tended to come from centers of population where unusual opportunities for cultural and intellectual contacts were at hand. It was found that education, wealth, and well-directed leisure were also closely related to the incidence of eminence. Ward[9] later took a lively interest in Odin's work, contending that it demonstrated the indispensability of a good education. In fact, he concluded that "it is impossible for a man of genius to attain eminence and remain all his life in the country" (page 215).

In the United States, Cattell[10] studied the environmental background of a group of distinguished men of science. He was particularly interested in their places of birth. Like Odin, he found that men of great achievement tend to come from large centers of population, in this case from industrial New England.

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[7] A. E. Wiggam, *The New Decalogue of Science*, Bobbs-Merrill Company, 1922. Also, *The Fruit of the Family Tree*, Bobbs-Merrill Company, 1924.

[8] A. Odin, *Genèse des Grands Hommes, Gens de Lettres Françaises Modernes*, Paris, H. Welter, 1895.

[9] L. F. Ward, *Applied Sociology*, Part II, Ginn and Company, 1906, Chap. 9.

[10] J. McK. Cattell, A Statistical Study of American Men of Science, III: The Distribution of American Men of Science, *Science*, 24: 732–742, 1906.

Very few, in both the absolute and relative to population senses, came from rural sections (especially in the South). Cattell doubted whether differences in family stock would lead one section to produce a hundred times as many men of science as did other sections. He concludes rather that "*The main factors in producing scientific and other forms of intellectual performance seem to be density of population, wealth, opportunity, institutions, and social traditions and ideals.*"

Just as Galton and Woods, for example, came to the conclusion that the power of heredity is the predominant one, Odin and Cattell, approaching the problem from another angle, believed that their evidence indicated the supreme importance of educational and social opportunity. Even if the data secured in all these studies were highly reliable (which they certainly are not), the question of who is right would be a very problematical one. In many cases, it is obvious that the facts presented would be explicable in terms of either heredity or environment. Furthermore, the fact that in all these cases both hereditary potentialities and environmental pressures were unknown factors, practically vitiates the argument. For the most part intelligence was merely inferred, as were the effective elements of an intellectually stimulating environment.

Modern Methods of Studying Effects of Opportunity.—Probably the principal improvement introduced by the more recent experimental approach to the nature-nurture problem is involved in the development of objective techniques for studying more critically the influences of environmental forces on the growth of personality qualities. As already noted, the older investigations were for the most part dependent upon subjective opinions, unreliable character estimates, and loose observations. Today we are equipped with reasonably reliable tests, scales, and other objective measuring instruments. Moreover, results secured from the application of these devices have been subjected to critical statistical treatment, a procedure which has in turn yielded important and reliable disclosures. Thus, with our quantitative instruments and objective research techniques, we are in a good position to attack the problem of environmental influence so far as it can be made to yield to such an approach. Since heredity and environment are inseparable aspects of a total composite influence, this means, of course, that we can only set up factor controls in such ways as each situation permits.

The four approaches in use today have been summarized as follows by Schwesinger[11]: (1) The traditional "family history" procedure supplemented by efforts to trace both the hereditary and environmental influences which have been instrumental in bringing about personality characteristics. This is essentially the method used by Terman[12] and his associates in their studies of genius. (2) The study of environmental influences on individuals whose heredity is identical (identical twins). This introduces the most reliable control of one factor available but is difficult to carry out owing to the necessity of separating families and of varying social surroundings. Newman[13] has, however, been very successful with this approach. (3) The plan of holding environment constant while varying the heredity of subjects. The usual procedure here is to study children reared in an orphans' home who presumably came from a variety of identifiable social stratas. Unfortunately for psychological study, however, inmates of such institutions usually come almost exclusively from the lowest levels of society. Yet some good studies employing this technique have been reported. (4) The fourth approach is the method of "matched groups." In this plan, two groups of individuals are equated as to such important factors as abstract intelligence, social background, and similar significant influences, after which one (the experimental) group is subjected to certain selected opportunities, the effects of which can be detected and measured. This method introduces a control of factors without attempting to estimate the hereditary background of subjects.

II. THE INFLUENCE OF FORMAL SCHOOLING

The almost sensational growth of secondary and higher institutions of learning in this country is mute testimony to the credence which America places in the educability of its citizenry. Almost all of us believe in the greatly amplified capacity for intelligent life adjustment generated by a well-directed education. But in thinking of the advantages of systematic schooling, the question naturally arises whether the outcome is usually reflected in increased ability to reason or generalize—in short to cope with the abstract complexities of mental tests—or whether educational advantages merely multiply one's stock of information, meaningful or otherwise. It is one thing for the schools to raise the average "test" intelligence of the nation and another only to preserve erudition as content in the "minds" of pupils. This problem is but another approach to the question of the "innateness" or constancy of the intelligence quotient.

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[11] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, pp. 172–174.

[12] L. M. Terman and others, *Genetic Studies of Genius*, vol. 1, Mental and Physical Traits of a Thousand Gifted Children, Stanford University Press, 1925.

[13] H. H. Newman, Identical Twins Reared Apart, *Eugenics Review*, 22: 29–34, 1930.

There are a number of lines of evidence touching on the effectiveness of schooling in modifying the I.Q., and although these are in some cases conflicting, they do indicate the status of the issue as we know it today. Some of the studies involved have already been presented in connection with the problem of the constancy of the I.Q., but others of equal import will be offered here.

School Attendance Affecting Test Scores.—Some fifteen years ago, the English psychologist Burt[14] started a controversy by announcing that according to his statistical findings over one-half of the ability to achieve mental-test scores is attributable to attainments in school and that Binet-Simon scores are in particular influenced by linguistic ability. Burt's conclusions have been called into question by a number of workers who contend that he did not make a clear distinction between what is cause and what is effect in the matter of mental ability vs. school success. As F. S. Freeman[15] comments, "It is just as reasonable to conclude that successful performance on the Binet and successful school work are dependent on similar elements and hence success in one is likely to indicate a fair amount of success in the other." In short, it is a question of whether mental-test ability influences school success or whether, on the contrary, formal school experience contributes to test intelligence.

According to Gordon's[16] previously presented data relating to canalboat children (page 117), test intelligence depends as much on amount of formal schooling as does regular educa-

[14] C. Burt, *Mental and Scholastic Tests*, King and Son (London), 1921.

[15] F. S. Freeman, quoted in W. F. Dearborn's *Intelligence Tests*, Houghton Mifflin Company, 1928, p. 119.

[16] H. Gordon, Mental and Scholastic Tests among Retarded Children, *Educational Pamphlets* (London), no. 44, 1923.

tional achievement. He found the same correlations between I.Q.'s and amount of schooling as between educational ratios and school attendance. Gordon's children, who enjoyed only 5 per cent of the normal amount of schooling, showed a progressive decline in I.Q. scores from ages six to nine. The coefficient was −.75. Naturally, Gordon did not believe that these children became concomitantly dull as they grew older. What he did say was that, according to the evidence, mental development as reflected by test scores is associated with school life—in short, that tests for the higher ages do require some schooling as well as a modicum of cultural background. This interpretation is strengthened by the findings of a recent study by Jordan (reported on page 122) in which children from humble homes declined in I.Q. scores from the first to the seventh grade.

Lest it be thought that all the evidence is on the side of school experience, let us examine two fairly recent studies which tend to indicate otherwise. Heilman[17] made a careful study of the educational ages and I.Q.'s of a group of representative ten-year-old children and claims to have found that about 50 per cent of the differences in E.A. were due to heredity. Differences in amount of time spent in school were said to account for only 13 per cent of the variations noted. According to Heilman, regardless of varying amounts of schooling, children tend to attain to a degree of school accomplishment that is commensurate with their mental ability as indicated by previous test scores.

In a somewhat similar investigation carried out in New York City, Denworth[18] correlated attendance records with Stanford-Binet scores as well as with Stanford Achievement-test results. She, too, found that mental-age and achievement scores are both far more dependent upon mental ability than upon amount of exposure to formal instruction. In conclusion, Denworth writes, "Comparisons of the results of mental age, of length of school attendance, and of chronological age, correlated with educational age, particularly for groups of uniform chronological age, shows that intelligence has contributed much more heavily than either attendance or age to the educational achievement of the children studied."

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[17] J. D. Heilman, The Relative Influence upon Educational Achievement of Some Hereditary and Environmental Factors, 27th *Yearbook, N.S.S.E.*, Part 2, 1928, pp. 35–65.

[18] K. M. Denworth, The Effect of Length of School Attendance Upon Mental and Educational Ages, 27th *Yearbook, N.S.S.E.*, Part 2, 1928, pp. 67–91.

Further Evidence from Army Test Data.—While the army psychological-test data are now a bit old and perhaps not so relevant as some of our more recent evidence, they do afford a rather striking picture of the influence of formal schooling on intelligence test scores. An examination of the figures in Table 3 shows clearly that in this instance there is a positive correlation between the amount of schooling experienced and standing on test scores.

TABLE 3.—AVERAGE ARMY ALPHA TEST SCORES MADE BY MEN IN THE SERVICE WITH VARYING AMOUNTS OF SCHOOLING*

Group	School grade completed					
	0–4	5–8	High school	College	Beyond college	Total score
White officers	112.5	107.0	131.1	143.2	143.5	139.2
White draft, native	22.0	51.1	92.1	117.8	145.9	58.9
White draft, foreign	21.4	47.2	72.4	91.9	92.5	46.7
Colored draft, North	17.0	37.2	71.2	90.5	.....	38.6
Colored draft, South	7.2	16.3	45.7	63.8	.....	12.4

* Adapted from the *Army Report* in F. N. Freeman, *Mental Tests*, Houghton Mifflin Company, 1926, p. 466.

It will be seen from this table that, with the exception of one of the officer groups, the more schooling the average individual had enjoyed, the higher his test score. On first thought, one would be inclined to assume that individuals with relatively more schooling make higher scores because said schooling increases the kind of abilities reflected in the tests. But again we have a relationship which may be concomitant rather than causal. In brief, we are not sure which is cause and which is effect, or even if either factor caused the other.

Those who feel that native intelligence is responsible for the noticeably higher scores made by officers point to the striking fact that officers with only four or less years of schooling to their credit made decidedly higher marks than did white enlisted men who had attended school for as many as 12 years (Table 3).

Brigham[19] showed that in a sampling of 660 officers, who had completed 8 or less years of schooling, and 13,943 native-born enlisted men, all of whom had studied beyond the eighth grade, the former made the higher average test scores. The question naturally arises why officers, although handicapped by a relative lack of the supposedly all-important formal education, succeeded in achieving higher scores than did enlisted men with more schooling.

We may as well admit that if these data are reliable and if the schooling in question was properly directed (or reasonably equal), the facts as presented argue for native capacity as an important determiner of intellectual ability. Incidentally, to refer to the table once more, while the relatively lower score of officers with 5 to 8 years of schooling to their credit (as compared with those having only 4 years or less) strengthens the native-ability hypothesis, the fact that officers with a high-school or college education transcended those with only a grade-school experience augers well for the "influence of formal schooling" cause. As Freeman[20] concludes, after reviewing all these considerations, "Army Alpha scores were affected, perhaps about equally, by differences in schooling and by differences in intelligence." This makes the argument a draw (in 1926) as far as Freeman, who is highly regarded in this field, is concerned. Mr. Lippman[21] who is known to be interested in education from the sociological standpoint, pointed out the dilemma of hereditarians when he commented on the army comparisons thus: "The psychologists could have said that in general the more schooling the better the score. They could have said that while schooling alone did not determine the score, it was certainly a powerful influence. Either interpretation would, however, have knocked out their claim that the tests measure native ability pure and simple."

Nursery Schooling and the I.Q.—With the evidence for the efficacy of schooling as equivocal as it is in the grade-school years, one is led to wonder what the situation is in the case of preschool children who might be thought of as virgin material for educational influences. In the main, we find that nursery school

[19] C. C. Brigham, *A Study of American Intelligence*, Princeton University Press, 1923, pp. 63–64.

[20] F. N. Freeman, *Mental Tests*, Houghton Mifflin Company, 1926, p. 470.

[21] W. Lippmann, A Defense of Education, *Century Magazine*, vol. 106, May, 1923.

experience either does not affect the I.Q. at all or that it raises it slightly and that usually only temporarily. Woolley[22] gave end tests to relatively equated groups of children who had and had not attended nursery school (seven to fourteen months) and found that the nursery group gained more in I.Q. standing than did the control children. She suspected, however, that the gains might be due to factors other than genuine improvement in intelligence such, for example, as a more ready response or an increased freedom from timidity in test situations.

Florence Goodenough[23] made a similar study taking care to equate her children in such factors as age, sex, intellectual status, and occupation and education of parents. The results of nursery-school training for 1 year as indicated by the Kuhlmann-Binet examinations served to increase the I.Q.'s of the experimental group but slightly. Almost equal changes were registered in the control group. There was apparently no relation between amount of time spent in school and improvement in I.Q.

Working with two rather small equated groups of preschool children (40 in each), Hildreth[24] studied the duration in the first grade of I.Q. gains made by graduates of the nursery school. She found that although her nursery school pupils entered the first grade with an average earned advantage of six I.Q. points over the control children, they lost the same by the end of the first grade year. Hildreth suggests tentatively that mental test gains made in the nursery school are temporary only, being lost in the early grades. This outcome differs somewhat from that found by Wellman[25] in the Iowa Child Laboratories. Gains on the part of preschool children ran as high as 15.6 points and for the most part those I.Q. increases were not lost in the grade school years as long as the children remained in the stimulating environment of the University Elementary School.

From these data it is evident that those who expected to find large and permanent I.Q. gains in the supposedly impressionable and plastic nursery school age are in for a disappointment. In fact, Wechsler[26] discovered that in the case of the Binet tests, scores are not appreciably influenced by schooling until about the age of ten. After that lack of application to the content subjects of the upper grades seem to bring about a greater variation in individual differences.

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[22] H. T. Woolley, The Validity of Standards of Mental Measurement in Young Children, *School and Society,* 21: 476–482, 1925.

[23] F. L. Goodenough, The Effect of Nursery-School Training upon the Intelligence Test Scores of Young Children, 27th *Yearbook N.S.S.E.,* Part 1, 1928, pp. 361–369.

[24] G. H. Hildreth, The Resemblance of Siblings in Intelligence and Achievement. *Teacher's College Contributions to Education,* no. 186, 1925.

[25] B. Wellman, Some New Bases for Interpretation of the I.Q., *Journal of Genetic Psychology,* 41: 116–125, 1932.

Systematic Instruction and Intellectual Status.—In all the studies presented thus far in this section (effects of formal schooling), the expression "formal schooling" has been used as a blanket term connoting educational advantages; furthermore, the questionable assumption has been tacitly made that all schooling is, in general, equally effective in influencing intellectual status. The inadequacy of this position has been pointed out by a number of educators. Morrison[27] for instance, makes a decided distinction between the "casual influence" of the environment and the influence of "systematic instruction." In commenting on differences observed in some of Newman's[28] identical twins (to be presented later), who had been reared in different types of environment, he reasons that if the parents or foster parents, as the case may be, were the kind of people who were well qualified in the art of child rearing, being able to prevent unfavorable educational tendencies and capable of giving the child the benefit of genuine systematic instruction, we would witness a much greater improvement in intellectual ability than is now in evidence in most cases.

As a matter of fact, Morrison's thesis holds that, if we assume the presence of thoroughly systematic teaching designed to assure the assimilation of permanent intellectual adaptations (insights or understandings), there is no reason why we should not expect a degree of intellectual mastery far beyond that now commonly regarded as expectant. In short, much so-called "schooling" is not worthy of the name, being merely a regime of fruitless and noneducative "lesson learning." In this sense, the failure of traditional schooling to improve the I.Q. is to be expected since it takes real systematic "unit-mastery" instruction to insure tangible intellectual growth.

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[26] D. WECHSLER, On the Influence of Education on Intelligence as Measured by the Binet-Simon Tests, *Journal of Educational Psychology*, 17: 248–257, 1926.

[27] H. C. MORRISON, *Basic Principles in Education*, Houghton Mifflin Company, 1934, pp. 391–400.

[28] H. H. NEWMAN, The Effect of Heredity and Environmental Differences upon Human Personality as Revealed by Studies of Twins, *American Naturalist*, May–June, 1933.

This author believes implicitly in the improvability of the intellectual component of personality through intelligently directed instruction and scouts the idea that "innate" capacities always place definite limitations on intellectual possibilities. Thus, he is not at all impressed when typical casual schooling fails to raise an individual's I.Q. In defense of his doctrine, Morrison cites the remarkable case of Helen Keller and her superlative teacher, Miss Sullivan, who, by way of most excellent systematic teaching, brought about an educational product in her handicapped pupil far beyond the expectations of the most optimistic environmentalists.

This view of human educability may be speculative and to some extent unproven but it certainly merits the respectful attention of unbiased educators who are willing to try out the possibilities of a promising hypothesis. Incidentally, Bagley[29] has been advocating a proposition much similar to this view (improvability of test intelligence) for some years. And recently, as studies being presented in this chapter indicate, an appreciable amount of evidence favorable to such a thesis has been accumulating.

III. EFFECTS OF FOSTER HOME ADOPTION

In view of the inseparable nature of biological heredity and educational influences, it is extremely difficult to formulate a promising plan of experimental attack on the problem of estimating, in a critical sense, the relative effectiveness of either factor as such. From a meticulous point of view, we could say that in order to be sure of the relative influence on the I.Q. of the general environmental factor we would first need to know in any given case the absolute potential for mental development resident in the individual's gene equipment. Since such knowledge is necessarily not forthcoming, gene organization always being an unknown factor and the strict biological inheritence of intelligence being such a moot question, we must resort to whatever reasonably satisfactory substitute approach to a solution can be formulated. Of course, we can study the changes observed in the intellectual life of identical twins since there we have an opportunity to make comparisons with the assurance that one of the two troublesome operating factors is actually under control. Being unwilling, however, to confine our knowledge to twin data, we have sought and found other avenues of attack in the persistent question of the improvability of mental acumen (actually "test" ability.)

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[29] W. C. Bagley, *Determinism in Education,* Warwick and York, 1925, Chap. 1.

Evidence from Freeman's Chicago Study.—Freeman[30] and his associates, have made a very valuable contribution to our understanding of this question by their carefully conducted investigation of the influence of foster home placement on the I.Q.'s of 401 Chicago children. Being interested in noting changes in mental ability that might have been induced by prolonged superior home influences these investigators ignored the unapproachable problem of so-called "original" innate intelligence and proceeded to measure test intelligence as it obtained before and after commitment to selected foster homes. It was a matter of gathering objective data on the much debated question of whether mental ability is an inherited constant or whether it is an adaptive capacity dependent in part at least upon social and intellectual experience.

A complete account of the Chicago study involves much detail, but the principal findings can be summarized readily. One group of 74 children of known I.Q. scores showed, at the end of 4 years, an average gain of 7.5 I.Q. points. Since the foster homes were rated on a quality basis, the investigators were able to differentiate between average gains made in superior homes (10.4 points) and those incidental to more inferior ones (5 points). As a rule children adopted at an early age made more improvement than those placed at a later age. One of the most interesting and perhaps significant phases of the study involves the case of 26 children whose own parents were known to be feebleminded. Yet when left for some years under the beneficent influence of normal homes and foster parents all but one tested near or above the familiar 70 I.Q. differentiating line. It would be fair to say that their average I.Q. score of 81 was appreciably above the hereditarian's orthodox expectancy.

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[30] F. N. Freeman, K. J. Holzinger, and B, C. Mitchell, The Influence of Environment on Intelligence, School Achievement, and Conduct of Foster Children, 27th *Yearbook, N.S.S.E.*, Part I, 1928, pp. 103–211.

Other pertinent data touch on correlations found between the foster children and other members of their own and adopted families. For instance, whereas unrelated children usually yield I.Q. correlations of approximately zero, such children living together for 4 years in a foster home produced coefficients ranging from .25 to .37. Conversely, siblings, for whom mental-test correlations usually average about .50, were related to the extent of only .25 when they had been separated before either was six years of age. Further, the I.Q.'s of the adopted children tended to gravitate toward that of their foster parents in proportion to the length of time spent in the home together. The coefficient rose from an initial .34 to a maximum of .52. Thus the various coefficients point toward the leveling influence of a common environment.

Critics of the investigation point to at least two facts that to them indicate the presence of selective factors operating to place the brighter children in the better homes, thus vitiating the idea that the superior homes actually produced the higher brackets of I.Q. improvment. They point to the fact that whereas the statistical relationship between foster parents and adopted children would normally be zero, in this case it was .37 at the time of placement. The correlation between home rating (material environment, culture, and education) and intelligence of foster children was found to be .48. It was also found that with reference to the 74 children mentioned above, a 4-year sojourn in a relatively poor foster home resulted in a final average I.Q. of 86 for some who were thus placed while those who lived in the superior homes achieved a final average of 95. Freeman believes that these differences can hardly be accounted for on the theory of the selection of the brighter children by the better homes. In fact, he has gone on record as suggesting that the gains made are, in general, striking evidence of the influence of favorable environment on intelligence as reflected in test scores.

Evidence from the California Investigation.—Miss Burks,[31] working under the direction of Terman at Stanford, has reported a major investigation somewhat similar to the one just reviewed. She studied the progress of 214 children who had been placed in foster homes by two California child-placement agencies before they were one year of age. Burks was very careful in her study of the home backgrounds as well as in her measurements of the children's intellectual progress. She included the parents in her testing program and used the results in arranging to work with a fairly homogenous group. In addition, she set up a control by studying the progress of a group of children living with their own parents under normal conditions.

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[31] B. S. Burks, The Relative Influence of Nature and Nurture upon Mental Development, *27th Yearbook, N.S.S.E.*, Part I, 1928, pp. 219–316. Quotations reprinted by permission of the Society.

In the end, the I.Q.'s of her children (ages five to fourteen) had risen from an estimated average of "not more than two or three points above 100 I.Q." to an average of 107. Burks figured that since the foster children reached an I.Q. average of only 107.4 while the children in the control group attained a figure of 115.4, the eight-point difference must be due to hereditary factors. Furthermore, in view of the fact that a difference of five to eight I.Q. points hardly exceeds the expected range of variability for individual test-retests, this investigator concluded rather definitely that home environment is a minor factor in the determination of ultimate intellectual status. In her final conclusions, Burks indulges in a bit of logical speculation by stating that "Home environment contributes about seventeen percent of the variance in I.Q." and that "The total contribution of heredity (*i.e.*, of innate and heritable factors) is probably not far from seventy-five or eighty per cent" (page 308).

Conflicting Interpretations.—It is a singular fact that although Freeman and Burks gathered evidence touching on almost identical problems and although they agreed in crediting moderate but significant increments of I.Q. increase to superior home environments, their interpretations tend to leave very different impressions on the reader. Burks gives every evidence of having assimilated the strong hereditarian tone which has characterized the Terman school of psychology at Stanford for so many years. She views the results of her well-conducted investigation as another strong argument for the power of hereditary forces. She contends that by no stretch of imagination can environment be attributed with an influence equal to that of heredity since, under the most extremely favorable conditions, the I.Q. can only be raised a maximum of about 20 points. She reminds us also that "heredity can produce alike the idiot of twenty and the genius of two-hundred I.Q." Of course, we could hasten to add that heredity never has produced any such genius. Only the stimulating effects of a good environment thrown in can insure such a happy outcome of even so-called "hereditary potential."

Burks's view is probably the most current one at the present time, at least many psychologists subscribe to it when they infer that while a satisfactory environment is in the nature of the case important for any form of growth, its chief function is often the secondary one of providing a medium in which the real factor—heredity—may have an opportunity to consummate its superior influence. In his familiar informal vein, Trow,[32] after commenting on the vast difference between a brilliant youngster, such as Galton was said to have been as a child, and a feebleminded or even typical school child, remarks that such diversity is too great "to be accounted for on the basis of a pleasant home, books lying around, and parental encouragement."

Freeman's interpretations, on the other hand, reflect the view of a scientific worker who recognizes the evidence for strong hereditary influences but who nevertheless sees the possibilities of superior nurture for the enhancement of not only test ability but perhaps other forms of desirable personality development. Freeman's data and conclusions are optimistic, pointing toward the possibility of even greater gains when the crucial social and intellectual elements essential to a high degree of mental development are better known. As Murphy[33] says, we may logically expect changes of as much as 30 or more I.Q. points if we introduce into the environment real opportunities to become familiar with the kind of verbal materials which are so strongly reflected in intelligence tests.

In brief, we will have to give up the naïve practice of lumping social, economic, cultural, and ordinary educational factors into a so-called "superior environment" in the belief that such a setup is certain to influence test intelligence specifically. If we want intellectual improvement along test-material lines we will have to fall back on the well-known principle of "specificity" in learning and provide a systematic educational program calculated, on the basis of definite correspondence with the objectives set up, to achieve these objectives. A blanket "superior" environment does not necessarily or perhaps usually provide the specific stimulating factors necessary to either general intellectual growth or specific test intelligence.

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[32] W. C. Trow, *Educational Psychology*, Houghton Mifflin Company, 1931, p. 423.

[33] G. Murphy, *General Psychology*, Harper & Brothers, 1933, p. 475. See also new evidence advanced by Dr. Beth Wellman in this connection. (T. R. Henry, The Wondering I.Q., *Journal of the National Education Association*, 27: 41, 1938.)

IV. TWIN DIFFERENCES AS EVIDENCE FOR OPPORTUNITY

Problems Involved in the Study of Twins.—From our discussion of the nature-nurture problem, it is apparent that the difficulty of securing accurate results touching on the relative influence of one or the other factor is due to the impossibility of holding either one absolutely (or nearly so) *constant.* As for environment, there is manifestly no hope of such a control, but we can, in the case of "identical twins," make comparisons between like-sex individuals whom nature has equipped with the same heredity.

In case the reader is not clear as to the difference between *identical* and ordinary or *fraternal* twins we can make the distinction by saying that whereas the latter (fraternal) are the result of the development of two different ova impregnated by two equally distinct sperm (binovular or dichorionic), the former (identical) results from the splitting of one fertilized ovum (uniovular or monochorionic) which can obviously contain only one set of inheritance determiners, the chromosomes. Thus fraternal twins are no different from ordinary brothers and sisters (siblings) and though born at approximately the same time they may be of the same or different sex and do not necessarily look at all alike. Being duplicates of the same ovum, born with one placenta and enclosed in one chorion, and always of the same sex, identical twins are obviously similar in gene inheritance. Here is one case, then, where the factor of heredity, while unknown in potential, can be held constant for two individuals.

Naturally identical twins have been the object of much study and have provided an avenue for the derivation of considerable evidence relating to the influence of nurture in the development of intellectual ability as well as other important personality traits. The identical-twin approach to the critical study of personality growth seems to be one of our best bets since through it we have finally found a satisfactory method of factor control. But here as usual in the complicated study of human behavior we are confronted with a number of difficulties which bid fair to dissipate the possibilities and findings of the method to a disconcerting degree. In the first place, since only about 40 per cent of like-sex twins[34] (approximately 25 per cent of all twins) are identical, it is difficult to secure a satisfactory sampling (from a statistical standpoint) for scientific study. Furthermore, for social reasons, very few of those available at all are available for prolonged study in distinctly contrasted environments. And as Bagley[35] is so careful to remind us, there is the difficulty of determining, in a critical sense, in just what way contrasted environments are significantly dissimilar in their influence on intellectual growth as such.

Another difficulty is involved in the correct identification of duplicate twins as they are usually found many years after birth. Some believe that we have at present no satisfactory means for such detection although Newman[36] is generally credited with being in possession of adequate criteria for this differentiation. And finally, as Dearborn[37] points out, there is always the possibility that twins identical in germinal inheritance may through intra-uterine influences (congenital) develop dissimilarities before birth. However, in spite of the inadequate and conflicting data contingent upon these considerations, the co-twin approach to the problem of environmental influence has certainly turned out to be a fruitful one.

Some Outstanding Studies of Twins.[38]—Before presenting statistical data from some of the more representative studies of twin resemblances, it may be well to consider the diversity of interpretations to which they have led. For some time, it has been known that the closer individuals are related as to "blood" relationship the higher are coefficients of correlation computed from their mental-test scores. In a very general way, we can say that while correlations for unrelated children are usually zero, or nearly so, those for cousins run about .25, for siblings about .50, for fraternal twins around .70 to .75, and for identical twins about .90. Now, until relatively recently, it has been customary to attribute this progressively increasing relationship to a concomitantly closer degree of biological inheritance. That is to say that identical twins have a more identical inheritance than do fraternal twins while the latter in turn are the recipients of a more similar heredity than are siblings. In the case of duplicate twins, this argument is no doubt sound, but when we come to fraternal twins we are confronted with the biological fact that their heritage is apparently no more identical than that of ordinary siblings.

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[34] H. H. Newman, Studies of Human Twins. I: Methods of Diagnosing Monozygotic and Dizygotic Twins. *Biologic Bulletin*, 55: pp. 283–297, 1928.

[35] W. C. Bagley, *Education and Emergent Man*, Thomas Nelson & Sons, 1934, p. 105.

[36] H. H. Newman, *op. cit.*, p. 290.

[37] W. F. Dearborn, *Intelligence Tests*, Houghton Mifflin Company, 1928, p. 289.

[38] An excellent résumé of twin studies may be found in G. C. Schwesinger, *op. cit.*, pp. 175–231.

Thus we could, with impunity, reason that the greater intellectual resemblances found among fraternals are due to a concomitantly greater community of experience. This point is by no means proved, but when we consider the fact that fraternal twins are the same age, tend to be in the same grade, to have the same teachers, and to enjoy many other fairly identical experiences, the logic of the situation leads us to expect higher degrees of resemblance than would be likely to obtain in the case of siblings.

When we consider identical twins with their even greater community of treatment and experience, it would hardly make sense to expect anything but a high degree of intellectual resemblance. From a scientific standpoint, this marked similarity of environment usually experienced by identical twins is unfortunate, since it retards our one controlled method of measuring the effects of diverse environmental conditions.

In his early study of 50 pairs of New York twins, Thorndike[39] found a coefficient of .78 for twins in general. Since this figure was more than twice the size of that for a control group of siblings, Thorndike concluded that the environmental factor could not be regarded as the preponderant one. He reasoned that the effects of environment should be cumulative, thus causing older twins to be more alike in mentality than younger ones. In his study, this was not found to be the case. Burks[40] has taken exception to this principle, contending that the environment may accomplish its maximal effects quickly, being thereafter relatively powerless to exert an influence.

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[39] E. L. THORNDIKE, *Measurement of Twins, Archives of Philosophy, Psychology, and Scientific Method*, no. 1, 1905.

In their study of Canadian children in and around Toronto, Wingfield and Sandiford[41] found a correlation of .72 between mental test scores of 57 pairs of fraternal twins and a correlation figure of .91 in the case of 45 pairs of identical twins. The coefficient of .91 indicates practically a perfect correlation for the identical individuals since the reliability coefficients of mental tests seldom run much higher than such a figure. Furthermore, as previously mentioned, retests of the same individuals fluctuate on the average some five or six I.Q. points from the initial test. In this study then, the typical duplicate twin resembles his co-twin as much as he resembles himself. Wingfield and Sandiford found that the correlation figure for all unlike-sex pairs (necessarily fraternal) was .62 and that that for like-sex pairs (fraternal or identical) was .83.

Merriman[42] obtained the following correlation figures for the various types of twins: unlike pairs, .50; all pairs, .78; like pairs, .87. These data further stimulate the nature-nurture controversy since like-sex twins can be said to experience relatively more similar environments. When the like-sex twins are fraternal, it can hardly be insisted that they received a similar gene inheritance. Yet fraternal twins in general show consistantly higher correlations than do siblings.

One of the most satisfactory twin researches is that reported by Holzinger[43] (Holzinger, Freeman, Newman, and Mitchell) in which a thorough statistical comparison was made of physical and psychological characteristics between 50 pairs of identical twins and 52 pairs of like-sex fraternal twins. Duplicate twins were detected by physical measurements and by the incidence of reversal of body symmetry which is usually considered a satisfactory criterion. A summary of some of the most significant relationships found is presented in Table 4.

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[40] B. S. Burks, *op. cit.*, p. 25.

[41] A. H. Wingfield and P. Sandiford, Twins and Orphans, *Journal of Educational Psychology*, 19: 410–423, 1928.

[42] C. Merriman, The Intellectual Resemblance of Twins, *Psychological Monographs*, vol. 33, no. 5, 1924.

[43] K. J. Holzinger, The Relative Effect of Nature and Nurture Influences on Twin Differences, *Journal of Educational Psychology*, 20: 241–248, 1929.

TABLE 4.—CORRELATIONS INDICATING SIMILARITIES BETWEEN IDENTICAL AND FRATERNAL TWINS*

Measures	Identical	Fraternal
Standing height	.93 ± .01	.65 ± .05
Binet I.Q	.88 ± .02	.63 ± .06
Otis I.Q	.92 ± .01	.62 ± .06
Word meaning	.86 ± .02	.56 ± .06
Nature study	.77 ± .04	.65 ± .05
History and literature	.82 ± .03	.67 ± .05
Spelling	.87 ± .02	.73 ± .04
Woodworth-Mathews (neurotic inventory)	.56 ± .07	.37 ± .08

* Adapted from K. J. Holzinger, *op. cit.*, pp. 242–247.

These and previously presented correlations provide a good picture of the relationship obtaining among twins and as contrasted with siblings. The influence of heredity has been amply demonstrated by the figures for identical twins, while the importance of environment is abundantly attested to by the higher relationships for those encountering more similar living conditions. In his report, Holzinger concludes that nature and nurture are approximately equal in their influence on the production of mean twin differences. However, the data could on their face value be construed as indicating a somewhat stronger case for heredity than for experience. Hirsch[44] believes that the evidence (as reflected by mental-test scores) indicates approximately a 4:1 ratio in favor of nature.

Evidence from Identical Twins Reared Apart.—Thus far our study of identical twins has thrown very little light on the influence of the environment as a determiner of intellectual status or other personality characteristics. This is not at all surprising in view of the fact that those observed were, for the most part, living together and thus enjoying relatively similar opportunities. Now if we desire real striking evidence of the effects of environmental conditions on children of the same heredity, we must necessarily study cases in which identical twins have been separated for a number of years. Fortunately, a number of such cases have been reported by competent workers. As far as the effects of contrasted *general* or total environmental configurations are concerned, the evidence from these histories is fairly illuminating (though conflicting), but when it comes to a determination of the specific effects registered by *bit-by-bit controlled variations* in the environment, we are for the most part very much at sea. There are, however, important exceptions to this situation one of which will be mentioned a little later.

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[44] N. D. M. HIRSCH, *Twins: Heredity and Environment*, Harvard University Press, 1930, p. 9.

Probably the first account of the characteristics of identical twins reared apart was the one published in 1922 by Popenoe.[45] He made a brief study of twin girls *B* and *J* who had been separated when only two weeks of age but who had subsequently not been reunited until their eighteenth year. He found these girls to be very much alike in height, weight, color of hair, quality of voice, head measurements, and other anatomical features. Both told of childhood illnesses that had occurred at approximately the same time. They seemed to be much alike in mental ability and reported having similar administrative offices in school clubs. *B*, who lived in Wyoming, was required to move with her foster parents so often that she had been able to accomplish only 4 years of formal schooling. At fifteen she entered what turned out to be a successful business career. *J*, who was reared in Arizona, was able to finish high school and to take some summer school work in the university. She eventually taught school until her marriage at the age of twenty-one.

When Müller[46] later studied these twins (at about their thirtieth year) in more detail he not only noted their personality qualities, which were similar as to interests in books, recreations, and ability to gain popularity, but he measured objectively their intellectual status by the use of the Army Alpha and Otis Advanced Intelligence Tests. Their great similarity is evidenced by comparative scores (point scores, *not* I.Q. points) of 156 (twin *B*) and 153 (twin *J*) on the army tests and 64 vs. 62, respectively, on the Otis examination. Only on such emotions and social attitudes tests as the Pressey X-O scale and the Downey will-temperament tests did these girls exhibit noticeable differences, being in these respects no more alike than individuals taken at random.

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[45] P. Popenoe, Twins Reared Apart, *Journal of Heredity*, 13: 142–144, 1922.

[46] H. J. Müller, Mental Traits and Heredity, *Journal of Heredity*, 16: 433–448, 1925.

Following Müller's work, Newman,[47] of the University of Chicago, made a careful study of five pairs of identical twins reared apart. Inasmuch as his findings do not synchronize with those of his predecessor, we shall briefly summarize two of his subject pairs. Newman's first identical pair of girls, *A* and *O*, were separated at the age of eighteen months, owing to the death of the mother, but were subsequently reunited when about eighteen. In the meantime, *A* had been living with a middle-class family in a crowded section of London (the city of their birth) where she suffered some deprivations due to the World War. In addition to being somewhat weak at birth, she suffered sundry ailments and diseases such as scarlet fever, measles, whooping cough, tonsillitis, and bronchitis. Her educational progress, which tended toward the domestic arts, was considerably interrupted by the war. At the age of two, twin *O* was adopted by a socially well-established family living in the small town of Chelsea, Ontario, Canada. Thus, in contrast to her sister, she grew up in an uncrowded environment enjoying the advantages of a regular academic type of education. Both girls completed about nine years of schooling, took a special secretarial course and eventually entered the occupation of stenographer. Both were interested in church matters and not much given to activities pertaining to romance.

In summing up the relative personality status of this very diversely experienced identical pair, Newman writes that while they were still very similar as to emotional or temperamental traits they were decidedly dissimilar in educational and intellectual status. Twin *O*, whose fortunes carried her to North America, turned out to be one year and seven months ahead of her twin in educational age (E.A.) and one-year and eleven months advanced in mental age (M.A.). On the basis of the Stanford-Binet scale, she earned 12 more I.Q. points than did her less developed sister, while on the nonverbal International Group test she was ahead by 62 raw score points. So we see that whereas differences in environment and education caused Müller's twins to become dissimilar in temperament rather than in intelligence, the same diversity of background brought about the opposite result with Newman's duplicate pair—a decided difference in test intelligence but no significant change in such personality traits as temperament or emotionality. Evidently dissimilarity of experience does not always register the same kind or degree of effects.

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[47] H. H. Newman, Mental and Physical Traits of Identical Twins Reared Apart, *Journal of Heredity*, 20: 49–64, 97–104, 153–166, 1929.

Newman describes another pair of girl twins who were reunited after twenty years of living under somewhat contrasted conditions. Twin *E* had been adopted by a family in Indiana in which the father could read nothing heavier than newspapers and the mother not at all. Owing to illness in the home, *E* did not progress in school further than the fifth grade. The sister *G*, whose foster parents died some five years after her adoption, was subsequently educated in a convent. Later she graduated from a normal school, excelling in piano playing as well as in literary lines. Eventually both girls became doctor's assistants and were thus in a position to be together.

When measured for educational and intelligence-test status, *G* was decidedly ahead of her less favored sister, being three years and two months advanced in educational age and one year and eleven months in mental age. In tests of emotional and temperamental traits, these twins seemed to be very similar in spite of the years of separation. Here is a case of identical individuals reared apart in somewhat similar general environments but with the educational advantages distinctly more favorable to one. And in this instance, both educational- and intelligence-test scores definitely reflected the difference in formal schooling enjoyed. Newman believes that it would be fair to conclude that in this case the emotional environment was much more similar for the girls than were conditions conducive to the stimulation of intellectual growth. He does not believe that emotional traits are necessarily more strongly determined by heredity or less amenable to modification than intellectual abilities.

Conclusions on Twins Reared Apart.—In her résumé of identical-twin data, Schwesinger[48] makes it clear that we cannot, with so few recorded cases of identical twins reared apart from infancy available, generalize as to the effects on intellectual growth of different environments. We can lump the varying environments noted and say that the average intra-pair difference is 7.7 I.Q. points with a variability ranging from 0 to 17 points. But these figures do not differ greatly from those for identical twins reared together, namely, an average intra-pair difference in I.Q. of 5.3 points with a variability of from 0 to 20 points. Incidentally, it should not be overlooked that *variations* within a group are perhaps more significant for correct interpretation than are the *averages*.

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[48] G. C. Schwesinger, *op. cit.*, pp. 225–231. Compare with more recent findings in H. H. Newman, F. N. Freeman, and K. J. Holzinger, *Twins: A Study of Heredity and Environment*, University of Chicago Press, 1937.

As Schwesinger also brings out, we must be cautious about assuming that, because individuals have been separated, their general environments are necessarily entirely different. Of course, they would differ greatly in detail and material pattern, but in homes of similar cultural level, it is conceivable that influences germane to the promotion of such verbal knowledge as our present mental tests reflect may be quite similar. On the other hand, it is possible that two apparently similar environments (even within one home) may, owing to special advantages of an unnoticed nature, be decidedly dissimilar in their effects on test intelligence. In order really to detect all these differences, we should have batteries of *specific measures of the environment*. A few of these (for example, socioeconomic-background tests) have made their appearance, but for the most part we are still depending upon case histories based, in turn, mainly on unreliable memories and anecdotal accounts.

What we need is facilities for varying *specific aspects* of the environmental matrix for purposes of measuring the *intellectual modifications* occasioned thereby. In this way, we might eventually come into possession of more accurate knowledge touching on actual causal connections obtaining between specific stimulating conditions and concomitant intellectual growth or decline.

An approach to this technique is illustrated in Gesell and Thompson's[49] experiment in teaching a twin the art of stair climbing while its co-twin proceeded on her regular program of structure maturation. As it turned out the youngster who at fifty-three weeks had five weeks of practice to its credit lost the advantage gained in one week. All of which indicates that in this instance a good deal of what appeared to be due to learning was really the result of neural and structural growth within the child. It is entirely conceivable that such an item-by-item variation might be elaborated into a large scale environment-measuring program designed to establish fairly predictable causal connections. Such data would greatly enrich our understanding of the educational patterns essential to desirable personality modification.

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[49] A. Gesell and H. Thompson, Learning and Growth in Identical Infant Twins, *Genetic Psychology Monographs*, 6: 1–123, 1929.

V. INFLUENCE OF RURAL VS. URBAN ENVIRONMENT

The question has frequently been asked whether country children are as bright as their city "cousins." Brightness as an aspect of personality is certainly broader than the scope of our present mental-test subject matter, but queries on the subject usually have reference to ability to make satisfactory I.Q. scores. In this sense, all we have to do in order to answer the question is measure representative groups of rural and urban children until a definite trend of evidence has been established. As might be expected a number of such comparative studies have been consummated and, incidentally, with almost universal agreement as to the relative status of the groups under consideration. In short, all the researches testify to the general retardation of rural children in their ability to cope with the problems of mental tests.

The related question as to why this is so naturally arises. One is constrained to inquire whether a selective process whereby cities "drain off" the cream of the rural stock is operating, or is it perchance a matter of the urban children being stimulated by superior educational facilities to function in the higher brackets of their supposed potential capacity? If one essays to answer this question he is axiomatically confronted with the further problem of whether intellectual ability is to be conceived of as innate and therefore constant or whether one's intellectual status at any given point in life is the natural end product of all the interrelated mental ability producing events encountered.

It must be admitted that considerable evidence (not necessarily conclusive) in favor of the latter view has been advanced. In the case of the consistently superior showing of city children, we could certainly expect to be forgiven if we declined to place too much credence in the assumption that the superior intellects have for the most part migrated to town. It would seem to be more to the point to inquire about just what general or specific advantages the city offers that can be regarded as bona fide explanations of the relatively higher test intelligence of the urban children. It may be that the typical city presents special opportunities for the acquisition of those verbal abilities which we all know to be so imperative to successful experience with current mental tests.

Early Comparisons of Urban and Rural Children.—Of the older studies in this field, we can cite only a few of those reviewed by Pintner[50] and by Shimberg.[51] In his survey of 1,165 children in grades three to eight, Book[52] made a comparison of the scores for rural and urban pupils. With the exception of fifteen-year olds, city children achieved consistently higher median scores. This author concludes, "If we take the years eight to thirteen inclusive for the city and country we find that only twenty-four percent of the country children rate above the medians for the city and only two percent score above the highest ten percentile of the city children."

Book[53] also studied a large number of urban and rural high school seniors in Indiana with a view to making various comparisons between them. Here again he found that city youth make a decidedly better test showing than do their country classmates. This showing was true of all sections of the state although both groups from the southern section, for reasons that might possibly be explicable in terms of its historical background, made relatively lower median scores.

A comparison of the test scores of 321 country children with the norms for city children of comparable age by Pressey and Thomas[54] confirmed the intellectual superiority of the latter group. They found that for chronological ages 10 to 13 the percentage of rural children exceeding the norms for city pupils was only 29, 33, 21, and 25 respectively. These investigators learned also that children from good farming districts were intellectually superior to those hailing from hilly and barren districts. In England, Thomson[55] found much the same situation although he discovered that in Northumberland County, at least, superior individuals tend, on the average, to dwell either in the city proper or considerable distance in the country. Thomson concluded that cities tend to be selective through a process of drainage of the *near-by* superior intellects.

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[50] R. Pintner, *Intelligence Testing*, Henry Holt & Company, 1931, pp. 251–253, 278–280.

[51] M. Shimberg, An Investigation into the Validity of Norms with Special Reference to Urban and Rural Groups, *Archives of Psychology*, vol. 16, no. 104, 1929, pp. 1–84.

[52] W. F. Book, Variations in Mental Ability and Its Distribution among the School Population of an Indiana County, *Bulletin of the Extension Division*, Indiana University, vol. 4, no. 4, 1918, pp. 100–131.

[53] W. F. Book, *The Intelligence of High School Seniors*, Ginn and Company, 1922.

[54] S. L. Pressey and J. B. Thomas, A Study of Country Children in (1) A Good and (2) A Poor Farming District, by Means of a Group Scale of Intelligence, *Journal of Applied Psychology*, 3: 283–286, 1919.

This early disposition to regard ability as definitely innate and constant in allegedly superior stock is illustrated by the conclusions of Hinds,[56] who, after finding the usual inferiority of rural pupils, writes, "It should not be forgotten, however, that for years there has been a steady migration of the country's best to the city. Lincolns come from the rural districts, but they never go back." Even Pintner,[57] who recognizes that there is no definite proof for the city-selection thesis, concludes that "it seems a plausible explanation."

This assumption appears to have been deeply imbedded in the mores of those not so far away days; besides, evidence was not yet at hand touching on the strong tendency for I.Q.'s, normal in preschool days, to deteriorate gradually with advancing years, when systematic educational opportunities were not available. One outstanding psychologist Freeman[58] did, however, recognize the plausibility of ascribing at least part of the superiority of city children to superior training, "since it (intellectual superiority) becomes less as the amount of training increases."

Evidence from the Genetic Approach.—In the foregoing studies, it will be noticed that both rural and urban groups of various ages were studied at certain stages of their growth without any particular reference to what had gone before in the genetic scale of mental development. This discrete view of intellectual status naturally led to omissions and misconceptions of the influence of favorable conditions in the development of the intellectual component of personality. Now with the advent of the vertical or "genetic" method of child study we get a longer time-span perspective and eminently more valid data which in turn tell us a different story; at least, a more convincing and unanimous interpretation is made possible. Even when different samplings of children are utilized in the different age groups, a clearer picture of intellectual growth or decline is afforded by the plan of studying the trend of development from preschool days up through the years as far as possible.

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[55] G. H. Thomson, The Northumberland Mental Tests, *British Journal of Psychology*, 12: 202–222, 1921.

[56] J. H. Hinds, A Comparison of the Brightness of Country and City High School Children, *Journal of Educational Research*, 5: 120–124, 1922.

[57] R. Pintner, *op. cit.*, p. 280.

[58] F. N. Freeman, *op. cit.*, p. 457.

In a somewhat extensive study of Blue Ridge Mountain children, Sherman and Henry[59] found a progressive decline in mental-test ratings with a corresponding advancement in chronological age. This means, of course, that in the isolated and decidedly backward communities studied, children who were originally equal in ability with normals for their age gradually lagged behind in I.Q. rating as they matured otherwise. According to the investigators the more isolated and less progressive the community, the more noticeable the progressive decline in I.Q.'s. This negative tendency was in evidence not only with verbal tests but in the case of performance tests as well. Sherman and Henry do not believe that these data indicate an inherent difference in capacity among the children of different ages, neither do they think that the basic capacity of those mountain-hollow children differs essentially from that of youngsters from an ordinary environment. As they put it, the deterioration noted is not a true one, being rather an expression of the absence of favorable conditions requisite to the development of those intellectual characteristics which we are wont to associate with intelligence.

This tendency for underprivileged children to become relatively duller with age was also exemplified in the previously reported study by Gordon of London canalboat children. Wheeler[60] has recently disclosed a similar trend in his study of Eastern Tennessee mountain district children. As the result of giving the Dearborn intelligence test to 1,147 school children from ages 6 to 16 and the Illinois scale as well to 565 of the original group, he, too, came out with a decided decrease in I.Q. scores with advancing years. The quotients ranged from 94.7 at age six to 73.5 at sixteen with a mid-point of 80.0 I.Q. at age eleven.

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[59] M. Sherman and T. R. Henry, *Hollow Folk*, The Thomas Y. Crowell Company, 1933, pp. 121–137; 193–208.

[60] L. R. Wheeler, The Intelligence of East Tennessee Mountain Children. *Journal of Educational Psychology*, 23: 351–370, 1932.

Baldwin, Fillmore, and Hadley[61] found essentially the same tendency in their comparative study of rural and city children. In harmony with other studies, they found no significant difference between urban and rural children *for the younger ages.* The rural youngsters did just as well as their city contemporaries up to about the age of three, but, beginning at the fifth year, the rurals fell behind in ability to score on the Detroit Kindergarten Tests. In ability to manipulate concrete materials, however, there was no significant difference between the two groups. The investigators believed that since the tests employed involve considerable verbal ability, the inferiority of the country subjects was due to a lack of suitable books and pictures in their home environment.

Even more barren were the intellectual surroundings of a group of extremely isolated children of a religious cult. Although apparently of normal intelligence, the parents choose to live without newspapers, radios, telephones, movies, or automobiles and were regulated in their personal and social relationships by strict religious traditions. According to the investigators, Ludeman and McAnelly,[62] the younger children earned Kingsbury and Myers I.Q. scores of 72.6 and 72.1 respectively, while the older children were only able to earn 66.3 and 68.8 I.Q.'s (National and Myers group tests.)

Conclusions on Rural vs. Urban Environments.—The inference to be drawn from these studies seems clear. Our regular mental tests are the very embodiment of verbal problems, and ability to cope with them is obviously unevenly distributed between children in city and rural environments. These considerations would indicate that normal systematic schooling and a reasonable number of cultural contacts, such as a city home and school system apparently provide, are essential to the development of the requisite verbal ability. The progressive inconstancy (decline) of the I.Q. as portrayed in our sampling of studies, if not due to errors of measurement, could in all logic be used as an argument in favor of the limiting influence of intellectually barren environments. This means that, in order to be successful with verbal intelligence tests, rural as well as urban children must be systematically exposed to such symbol and language materials as the tests are known to reflect.

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[61] B. T. Baldwin, E. A. Fillmore, and L. Hadley, *Farm Children; An Investigation of Rural Child Life in Selected Areas of Iowa,* D. Appleton-Century Company, Inc., 1930.

[62] W. W. Ludeman and J. R. McAnelly, Intelligence of Colony People, *Journal of Educational Psychology,* 21: 612–615, 1930.

If we are able to profit by the testimony of the evidence accumulated we are forced to the inevitable conclusion that children in widely differing communities should be compared with norms for their own group; *i.e.*, if we care to be fair with the children and consistent with the logic of the situation. We can hardly maintain that mental ability is strictly an "innate capacity" dependent upon maturation of "mind" and stubbornly constant amid the vicissitudes and limitations of diverse environments. The very concept of norms assumes reasonably common experiences for all whose fates are to be determined in the light of their standards. We certainly learned this during the war when our soldiers made such a sad showing in comparison with Terman's California norm-establishing children.

Finally, we must push on in an effort to determine just what *specific environmental factors* are responsible for (or associated with) the generation of satisfactory ability in similarly *specific verbal skills*. We want to know just what specific variables in rural communities are associated with the handicaps under which country children are apparently laboring. We are not likely to get far by merely estimating the general quality of so-called "superior" and "inferior" spheres of influence. We would like to know the detailed intellectual advantages imperative to any community charged with the task of engendering satisfactory mental ability.

A beginning has been made in this direction by Jones[63] and his associates, who recently made a study of the effects of limited environment on ability with *specific* mental operations within the Stanford-Binet Scale. In specific subtest items, such as copying squares, repeating digits, vocabulary, etc., they found marked differences in ability associated with distinct cultural levels. The investigators conclude that "rural inferiority in I.Q. is due partly, although not wholly to environmental factors; the environmental handicap is specific rather than general; specific handicaps are those which relate to limitation in the material environment, to lack of adaptability to certain arbitrary test requirements (as in speed tests) and to lack of language information" (page 83). In the end we can agree with Jones *et al.* that the retardation of rural children may be due in part to hereditary capacity but certainly to a very noticeable extent to restricted opportunities; also that inquiries into the nature of the handicaps operating can best be conducted on the basis of an analysis of the influences of specific environmental variables on the development of equally specific intellectual skills.

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[63] H. E. Jones, H. S. Conrad, and M. B. Blanchard, Environmental Handicap in Mental Test Performance, *University of California Publications in Psychology*, 5: 63–99, 1932.

VI. THE PERSONAL POTENTIALITY THEORY

In conjunction with the major question of the degree of educability of the human personality, there is at least one more problem which should engage our attention. It has to do with the meaning and personality implications of the word "potentiality" as applied to the cultural and intellectual development of man. This potentiality problem has everything to do with the crucial question of native educability of the human species; conclusions concerning it are closely bound up with an understanding of the nature of individual superiority and special talents; it lies at the heart of the question of race superiority; the theory of innate moral delinquency is one of its implications; and, in addition, it throws light on the extent to which physical disabilities condition the learning process.

Without concerning ourselves with any detached dictionary meaning which the word may carry, we can see plainly that, in our analysis of the nature of human development, the idea of potentiality involves at least two diametrically opposed beliefs. We often speak of the new-born child as being a "bundle of potentialities" or just plain raw material with great possibilities for personality development, including intellectual growth, which may be realized only if the favorable conditions of nurture, regarded as requisite for such an outcome, are provided. This is the view usually held by the more optimistic and least committed psychologists and is the meaning intended (unless otherwise specified) in previous references to the subject in the present work. The contrasted meaning (and, incidentally, the one involved in the following theoretical discussion) suggests "personal potentiality" as a name for the theory that ability, character, and personality are essentially innate, being gene inherited, and dependent upon only a modicum of external opportunity for their maturation or, better yet, their *unfoldment.*

Conflicting Potentiality Premises.—In spite of their alleged caution about coming to conclusions without bona fide evidence, workers of considerable prominence tend to take quite definite stands on this debatable question. A first group appears to be sold on the thesis that the intellectual and other such functional components of personality are wholly or largely innately potential and thus certain ultimately to express themselves if too many mitigating obstacles are not at hand to thwart their unfolding. A second and equally illustrious group holds closely to the assumption that personality traits, far from being preformed, *i.e.*, potential, are personal accretions of experience accruing to an extent and in a fashion commensurate with the quality and quantity of postnatal conditioning events encountered. As might be expected, a third group feels that perhaps gene inheritance as a general limiting factor is always compounded with the no less important external environmental factor in the development of one's possibilities. This seems to be the common sense view but some would no doubt say that it represents merely a compromise rather than a consistent stand. It could be argued that since heredity is always an unknown, potentiality, if it exists, could not be measured. This would appear to be true since all measurements of personality development, intellectual or otherwise, are made in the domain of educational (modifying) influence, and are *par consequent* hopelessly entangled therewith.

Perhaps one ought to take a stand on the potentiality question anyway but as is always the case when we cast our lot with a moot premise we are thereafter under more or less compulsion to rationalize our data in favor of the same. This is a precarious position for all but the most intrepid and not very palatable to one who prefers to keep himself open to the reception of what appears to be conflicting evidence. Nevertheless, it is interesting to trace the implications of these conflicting proposals.

In its semimodern form the potentiality theory can be credited largely to Rousseau's eighteenth century teachings. Reacting against the almost morbid interpretation of the moral nature of man as held by the ecclesiastics of his day he turned to an equally extreme doctrine for relief. Not only did Rousseau spurn the disheartening dogma of child nature as a state of total depravity with a natural antipathy for God, but he introduced the fanciful thesis that the infant's nature is at its origin naturally good and virtuous remaining so until besmirched by the ministrations of superficially conventionalized and crudely pragmatic men and women. Anyone who has read Rousseau's stimulating novel on education *Emile* can hardly help but smile at his subtle (and hypothetical) efforts to induce nature herself to rebuke any and all unfavorable behavior tendencies which arise. Rousseau was the champion of the natural-unfoldment idea and while he knew nothing of genes he certainly started plenty of people in the belief that personality qualities are implicit in the original organism needing only freedom from undue restraint and conventionality to ensure their fruition.[64]

That this doctrine has gripped the imagination of educators since those days is known to all students of history. Pestalozzi built thereon, at least in part, his theory of the potential possibilities of an individual's mental and moral faculties. Froebel elaborated the idea into his now famous kindergarten in which children were supposed under proper nourishment to develop in a way directly analogous to growing flowers and plants. Thus the kindergarten (child-garden) idea. More recently Kilpatrick and Dewey have ushered in the project school with all its possibilities for personality unfoldment. It would appear then that an appreciable fraction of our modern school system rests its case on the avowed or tacit assumption that each individual comes into the world with a complex potential equipment peculiar to himself and that it is the business of education to find ways and means most appropriate to the drawing out (unfoldment) of these possibilities.

Implications of the Potentiality Premise.—In contemplating the implications of the strict potentiality theory one is struck by the direction in which the logic of the situation naturally carries its adherents. They must of necessity seek either for the production of better gene equipped stocks or for educational techniques calculated to bring out hidden potentialities and creative abilities through subtle stimulation to unrestrained self-expression, or they can depend upon a combination of the two. The present widespread interest in activity or project schools is ample testimony to belief in the value of the second avenue of approach. As for interest in the eugenics solution, it can perhaps be best illustrated by reference to the proposals of representative individuals.

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[64] For a more amplified account of this question the reader is referred to L. P. Thorpe, Education and Naïve Belief, *Phi Delta Kappan*, 18: 79–82, 1935.

No less a scholar than Thorndike[65] has recently suggested that, since individuals differ so greatly with respect to the possession of *genes which are potential for intellect and character*, the problem of race improvement practically narrows itself down to that of the generation of better gene-equipped stocks. Contrary to the belief of many who recognize the accumulating stock of evidence for the efficacy of advantageous life conditions in influencing intelligence, Thorndike contends that development of superior intelligence through selective breeding is the more hopeful avenue to the establishment of better social conditions. Thorndike's logic leads him to conclude that, since "the more its genes favor wisdom and justice, the better customs and laws it will create," it is the bounden duty of the race, through the possibilities of eugenics, to improve the inborn potentiality of man to learn.

Thorndike may be right; but when we consider the known and unknown facts of biological heredity, as well as the mounting evidence for the improvability of test intelligence, we find it almost impossible to see how he can be right. The idea of gene inheritance of intellect is uncertain enough, but, when it comes to character, we are almost face to face with belief in innate moral tendency or even the possibility of transmission of acquired characters.

Nevertheless others, Wiggam,[66] for example, are wont to throw all caution to the winds and make such astounding declarations as these: "The . . . warning of biology to statesmanship is brief and simple . . . that [man] is not, as the glib reformer has taught you to believe, the helpless victim of the passing education, philosophy, and theories of pedagogy of his time; but that, in the germ cell, from which every man is born, there are resident those powerful personal forces by which he can rise in well-nigh any environment and, within the limits of human freedom, exclaim: 'I am the master of my fate; I am the captain of my soul.'" This is potentiality with a vengeance. We could surely be pardoned, though, if we made some remarks about the nostrum of oversimplification, not to mention the wanton ignoring of obvious data. On this basis then, we can conclude with Conklin[67] that, if personality is strictly the product of hereditary potentiality, there is not much point in maintaining such institutions as schools, churches, and government—the hope of the race lies in the possibilities of eugenics.

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[65] E. L. Thorndike, *Human Learning*, D. Appleton-Century Company, Inc., 1931, pp. 198–200.

[66] A. E. Wiggam, *The New Decalogue of Science*, Bobbs-Merrill Company, 1923, pp. 42–43. Copyright 1923, 1926. Quoted by special permission of the publishers.

Objections from the Behaviorists.—But this is only one version of the individual potentiality doctrine. Turning to orthodox behaviorists we are confronted with denials on every hand. Not only do they deride the notion that personality traits or behavior forms spring from innate forces, they dogmatically declare that an individual's ultimate personality is wholly the fruition of a lifelong synthesis of conditionings. In his treatise on systematic child care, Watson[68] insists that we "build in" everything in the way of behavior tendencies and emotional attitudes which ultimately appear in the personality. Believing as he does that we mold our young in our own image, this psychologist reasons that John Dewey and other activity-school advocates have done childhood serious harm by advocating a doctrine of mystery which teaches "that there are hidden springs of activity, hidden possibilities of unfolding within the child which must be waited for until they appear and then fostered and tended." Watson's view, while practical and certainly pregnant with possibilities, is generally regarded as inadequate since it is not broad enough in principle to account for all the observable facts of personality development.

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[67] E. G. Conklin, *Heredity and Environment*, Princeton University Press, 1929, p. 328.

[68] J. B. Watson, *Psychological Care of Infant and Child*, W. W. Norton & Company, Inc., 1928, pp. 38–41.

Morrison's Vigorous Opposition.—One of the most dynamic and perhaps one of the most able critics of the potentiality theory is found in the person of Professor Morrison[69] of the University of Chicago. With convincing logic and an occasional admixture of professorial fiat he bares the shortcomings of the whole business. In commenting on Rousseau's sentimental and visionary notion of original innocence and purity, he contends that infants actually appear on this earthly scene equipped with only certain inherent physical potentialities and a category of adaptive drives commonly called "appetites." If left to their own resources, assuming such a possibility, children would not only fail utterly to develop into a state of innocence but would rather gravitate toward a social level tantamount to savagery.

In the second place, so Morrison says, the unfolding of individual-potentiality thesis harks back to a now defunct genetic and embryological theory which held that within the human germ cell concerned with reproduction there was tucked away a preformed child in miniature. Under such circumstances child rearing and education would merely be a process of aiding and abetting the unfoldment of innate possibilities, such as they were. In summing up the issue Morrison offers one of his cardinal principles of education, *viz.*, that "the individual under education does not *unfold* his potentialities; he *uses* his capacity in learning" (page 350). As for inheritance, only the *adaptive organism* appears through its avenue; all personality attributes, including intellectual accretions, being products of the cultural climates encountered.

That Morrison does not stand alone in this matter of man's educability is attested by the utterances of a number of qualified students other than behaviorists. Witness Bagley's[70] former spirited debate with Terman over the question of educational determinism or the alleged innate permanency of the I.Q. Bagley has always argued, perhaps too optimistically, for the essential improvability of individuals and of all races for that matter. And he has not always been lacking in evidence for his contentions. Dearborn[71] has also taken exception to the stand of inheritance determinists to whom evidence for the efficacy of nurtural circumstances seems too "remote" for serious consideration. Like many other students of psychology, he believes that among the really important influences making for growth and development are learned attitudes, habits established before and after enrollment in school, opportunities conducive to a broad intellectual horizon, and the advantages of living with desirable people.

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[69] H. C. Morrison, *op. cit.*, pp. 346–354.

[70] W. C. Bagley, Educational Determinism; or Democracy and the I.Q., *School and Society*, 15: 373–384, 1922.

[71] W. F. Dearborn, *op. cit.*, pp. 281–285.

Individual Superiority and Special Talents.—It is interesting to contemplate the diverse interpretations that would naturally be placed on the frequent incidence of superior ability and so-called "special talents." That these are very much in evidence is so patent as scarcely to require mention. But before attempting an analysis, we should point out the necessity of distinguishing between such superiority or talent as might be classified as mainly neuromuscular in nature and that which is essentially intellectual. It would probably not be a breach of logic to regard such instrumental abilities as exceptional athletic skill or extreme facility with a violin or piano as having their foundation in an inherited organic potentiality for such neuromuscular responses. In short, these special abilities are probably to a large extent contingent upon the possession of an organism mechanically designed to facilitate such complex motor skills. If such is the basis of this type of talent, there is no mystery of unfoldment about it; it is just a case of potential neuromuscular coordinations responding to stimuli in progressively more or less adaptive ways according to the possibilities of their mechanical design and in harmony with the degree of physical and intellectual maturation attained.

But when we come to what is commonly called "intellectual genius" or "special talent," we are confronted with a bird of a different feather. Of course, we can do as Terman[72] and Cox[73] did, *i.e.*, make a "backward" study of the early desirable personality traits (including intellectual promise) of subsequently eminent individuals, which in every case seemed to foreshadow later performance. This position is clearly in harmony with the innate intellectual-potentiality theory and, on first thought, seems to fit the facts very well. However, when we turn the method around and make a "forward" study we find ourselves in a dilemma. In the first place, we know that genius is not inevitable (as Terman admits) since I.Q.'s as such fluctuate with marked and prolonged changes in opportunity, and, in the second place, even when the I.Q. remains characteristically constant, many youth of apparently great promise do not materialize at all in the sense of becoming eminent. The writer has observed this so much that it has become a commonplace to him. Witty and Lehman[74] have thrown light on the reason for this by pointing out the fact that the neglected factor of "drive" or industry is imperative to the success of a "potential" genius.

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[72] L. M. Terman, The Intelligence Quotient of Francis Galton in Childhood, *American Journal of Psychology*, 28: 209–215, 1917.

[73] C. M. Cox, *Genetic Studies of Genius: Early Mental Traits of Three Hundred Geniuses*, Stanford University Press, 1926.

Melvin[75] has hit upon a rather ingenius solution (in words) to this question of potential vs. learned intellectual ability. As he puts it, ability to cope with mental tests is a matter of *brightness* or *insight* but that neither of these terms is synonymous with *intelligence.* "Brightness" may be inherited in the sense that it is dependent for appearance upon the number of neurone patterns present in the brain, but the broader term "intelligence," which has reference to the power of making wise choices and resourceful adaptations, is learned through dynamic interaction with concrete realities. From this position, an individual with a high I.Q. would not necessarily be regarded as highly intelligent. High scores on intelligence tests would indicate brightness, but intelligence would be reserved as a characterization of individually satisfactory and socially desirable action. This interpretation evidently represents a compromise view of superiority and talent, some credit going to native endowment and the rest to effective educational procedures.

Morrison,[76] in an effort to obviate the necessity for any deterministic element, accounts for much of the observed superiority in intellect and eminence by crediting the same to the faster reaction time and personal maturation rate of some individuals, the beneficient effects of more systematic and thorough schooling, and even to the aggressive temperament of such individuals as "captains of industry" who perhaps make their adaptive responses on the basis of "unsublimated self-appetite."

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[74] P. A. Witty and H. C. Lehman, Drive: A Neglected Trait in the Study of the Gifted, *Psychological Review,* 34: 364–376, 1927.

[75] A. G. Melvin, *Building Personality,* John Day Company, Inc., 1934, pp. 118–129.

[76] H. C. Morrison, *op. cit.,* pp. 435–440.

Mursell[77] recognizes the presence of superior general abilities, but reasons that since distinguished achievements sometimes seem to spring up almost fully developed while in other instances they have required years of faithful industry for their attainment, we really do not know what makes the man of genius. As for the inheritance of special intellectual abilities, this writer warns us that belief in such compartmentalized talent practically commits us to a return to the old faculty psychology dogma. Whether we think in terms of "mind" or "brain," there is no evidence for discrete sections or abilities; to believe then that one person enjoys an inborn ability in English while another's talent is confined to language or science is, according to Mursell, nothing but a "wild *non sequitor*." In terms of basic physiological and psychological principles, as we know them, marked individual intellectual differences in ability at any given point in growth are "more likely to be due to differences in preparation, interest, and response to the kind of teaching provided." This is the view of the environmentalist and would seem to have much in the way of tangible data to commend it.

Breeding the Superman.—It is only natural that with the disclosure of our genetic laws governing the gene inheritance of physical unit characters, there should emerge a great hope that through this avenue we might possibly breed a race of superior men characterized by high intelligence as well as other very desirable personality qualities. This might work out if we were sure that all intellectual abilities and conduct dispositions were definite correlates of physical structure. Even then the breeding process would be very slow and would be almost hopelessly retarded by insurmountable moral endorsements deeply imbedded in the mores of all civilized groups. But when we consider the fact that there is a great difference between the inherited physical organism as such and the learnings, behavior forms, and life attitudes which emerge as a result of continual stimulation in the social medium, we begin to realize the futility of endeavoring to generate ready made or potential personality, a product which can only accrue as the result of satisfactory experience.

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[77] J. L. Mursell, *Principles of Education,* W. W. Norton & Company, Inc., 1934, pp. 251–255.

Except in terms of the transmission of superior organic structure the idea of genetic generation of the superpersonality sounds just a bit far fetched. Of course, if it could be shown that superior attainments are always a direct correlate of a concomitant degree of structural superiority, or even of innate capacity, eugenics would be the answer to our quest. But, except in the case of organic defect, who has demonstrated such a relationship?

Even biologists, who are sensitive to the possibilities of eugenics, recognize the limitations and undesirability of such a program, except, of course, in the case of definite feeble-mindedness and other such pathological traits. They recognize that some of our great intellects, such as Stevenson and Chopin, for example, were tuberculous. They also know that many gene taints can be obscured by judicious family eugenics such as some of our laws now provide for. Jennings,[78] after reviewing the possibilities along this line concludes as follows: "It is probable that changes in environment—changes in treatment of infancy, in education, in tradition, in custom, in ideals, in economic situation and the organization of society—can do much more for the ills of society than can be done through direct attempts to change the genetic constitution of the population" (page 246). Davenport,[79] also an advocate of eugenics, takes much the same position with reference to the problems of criminality.

Conclusions from the Potentiality Theory.—It is probably not possible in the light of present knowledge to settle the question of intellectual or any other kind of human potentiality on positive grounds. We can, however, indulge in a critical analysis of the implications of the various beliefs advanced and should be willing without undue a priori commitment to weigh impartially the evidence for and against opposing and compromise theories. We might be pardoned for leaning, in the absence of certainty, toward the more socially hopeful interpretations which stress man's educability, his cultural improvability, the possibilities of practically all races, and the improbability of such assumptions as the theory of innate potential delinquency.

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[78] H. S. Jennings, *The Biological Basis of Human Nature*, W. W. Norton & Company, Inc., 1930, pp. 223–251.

[79] C. B. Davenport, Crime, Heredity, and Environment, *Journal of Heredity*, 19: 307–313, 1928.

While we cannot here treat the balance of the interesting subjects just mentioned, we should add that attitudes toward them are contingent upon one's belief in the fundamental matter of innate potentiality. Practically all the standard investigations[80] have testified to the intellectual superiority of the white race, particularly the Nordics, but this does not of course prove superior innate endowment. Bagley[81] has offered considerable evidence indicating that the observed differences are due largely to differences in educational opportunity and cultural backgrounds. It is generally known also that, as more internationally constructed tests and fairer schedules of norms are developed, alleged racial differences in intelligence tend to diminish. The reason for this becomes more apparent when we realize the incongruity of the concept of distinct races[82] and especially the significant fact that there is much more variation in test intelligence *within* a race than there is *between* two races. These considerations can only mean trouble for the strict race classifiers. At any rate, the racial question is closely tied up with the problem of whether mental potentiality is ultimately innate and constant or whether it is in large part at least contingent upon cultural and educational advantages. Some believe that the superior showing of the white race is due mainly to advantageous geographical and climatic situations as well as to a fortunate direct cultural heritage from the ancients.[83]

If one accepts a strict literal interpretation of the theory of innate predetermination of intellectual ability and conduct disposition, one is likely to feel that delinquency is in many cases also inevitable, being potential in the genetic constitution. This is the fatalistic view which has led to belief in the so-called "criminal type," the theory of innate moral imbecility, and unverified ideas of causal relations between innate mental defectiveness and moral irresponsibility.[84] As students of crimi-

[80] R. Pintner, *op. cit.*, Chaps. 20, 21.

[81] W. C. Bagley, *Education and Emergent Man*, Thomas Nelson & Sons, 1934, pp. 100–101.

[82] J. Huxley, The Concept of Race, *Harper's Magazine*, May, 1935, pp. 689–698.

[83] H. C. Morrison, *op. cit.*, pp. 428–433.

[84] For a review of these theories see M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, pp. 377–403.

nology well know, these assumptions are largely without foundation, being unanalyzed conclusions based on a limited appreciation of the complexity of the true factors involved in antisocial behavior. As eminent an authority as Healy[85] states frankly that he has never been able to find a true moral imbecile. That morally abnormal behavior is closely associated with determinable stimulating factors in the social environment is so well known as to constitute practically a platitude.

Turning to another phase of innate potentiality beliefs, one might be inclined to figure that malfunctioning of the physical organism would automatically bring about a reduction in intellectual efficiency. But here too, we find that mental potentiality is apparently not dependent upon the integrity of physical structures. In reviewing the evidence on this point, Paterson[86] writes, "With the exception of diseases and injuries directly involving the central nervous system itself, it would appear that we cannot explain the tremendous range of individual differences in intellect on the hypothesis that unfavorable physical conditions or specific physical defects are operative as a major causal factor. Apparently, nature has so safeguarded the central nervous system as to render normal mental development relatively secure, or at least strongly immune to such deleterious influences as malnutrition, diseased tonsils, enlarged adenoids, defective breathing, defective teeth, simple goiter, intestinal toxemia, and even hookworm."

VII. SUMMARY AND IMPLICATIONS FOR PERSONALITY

If we may be permitted to regard intelligence—defined either as the ability to comprehend verbal and numerical abstractions or as facility in making highly appropriate adaptions to new and novel circumstances of all kinds—as the factor in the interlocking elements of personality which makes possible the intellectual improvement of mankind, it is clear that we are dealing with one of the fundamental issues of social progress. Although students of intelligence differ in their interpretations of the concept and disagree as to its hereditary limitations the trend of the evidence is clearly in the direction of the thesis that the great mass of mankind is far more educable than we had supposed. This is especially true if we are flexible enough to broaden our conception of mental ability to include such phases of its expression as social, mechanical, and artistic endeavors as well as the usual mental-test intelligence.

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[85] W. Healy, *The Individual Delinquent*, Little, Brown & Company, 1920, pp. 783–784.

[86] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, pp. 170–212.

The individual who works close to the biological angle of personality study and who becomes absorbed in the obviously logical structure-function hypothesis of mental ability, is naturally quite convinced after encountering the galaxy of studies indicative of the constancy of the I.Q. and the progressive nature of mental maturation (mental age), that germinal inheritance is the chief determiner of intellectual status. In short, he feels warranted in concluding that the educability of a given personality is quite strictly limited by unalterable hereditary forces. And in all fairness it must be admitted that there is abundant evidence pointing to important intellectual differences among individuals which appear to be due to hereditary influences.

On the other hand, those who have reviewed the literature pertaining to the influence of systematic schooling, the beneficent effects of improved home conditions and the mere fact of being an urban rather than a rural pupil are rightly impressed by the profound possibilities of intellectual improvement when external circumstances adapted to the generation of mental growth (at least test intelligence) are provided. Our hopes are naturally raised when we learn that the prolonged placement of young children in American homes of ordinary culture raises their average I.Q. scores around seven to ten points, with much higher increases noted in a large number of individual cases. We are further impressed when are are told that, although the favored social classes produce relatively more superior children, 75 per cent of the absolute number of such individuals come from the less favored levels.[87]

It is probably best, even at the risk of being considered indeterminately eclectic, to regard intelligence as being a product of both heredity and environment, that is, of an inseparable fusion of the two factors. Considered from this angle we can see the futility of arguing for intelligence as being either gene inherited or experientially acquired. It is really not a question of one or the other, and it is not consistent to think in general terms of the so-called "relative importance" or heredity and environment. After reasoning that since individuals with "potential" high I.Q.'s will in the nature of the case profit more from superior opportunities than those less favored by innate endowment, Schwesinger[88] concludes that alleged numerical ratios between nature and nurture influence belong in the scrap basket and that the real issue should be "Given a stated environment, how much variation will heredity permit for such and such a characteristic (among so and so individuals)? Or, given a stated heredity, how much variation could a given range of environment introduce for such and such a character?"

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[87] W. F. Dearborn, *op. cit.*, p. 315.

In the end, there is at least no point in taking a fatalistic attitude toward man's educability or in postulating an intellectual caste system as inherent in man's genetic constitution. It is clear from the evidence extant that the possibilities of intellectual improvement are great; the question is really one of providing an educational environment calculated to develop each individual to his fullest capacity, assuming that there is a definable limit to his possibilities. It is entirely possible that with the development of infinitely more effective educational procedures we may witness a much greater general improvement in intellectual growth than it has so far been our privilege to observe. We are encouraged in this hope by the overwhelming differences between our own civilization and that possessed by the more primitive tribes of earth which a more intellectually stimulating environment in general and more intelligent teaching in particular must have assisted materially in effecting.

On the other hand, we must not let our "imaginations" carry our optimism past the testimony of objective data. We must recognize the limits set by nature when such are demonstrated. And we must not forget that the interlocked influences of nature and nurture are not only always unknown factors but that their relative influence must be different in the case of each individual personality.

QUESTIONS FOR STIMULATING THOUGHT AND DISCUSSION

1. What considerations have caused us to question the finality of the findings and interpretations growing out of the pioneer nature-nurture

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[88] G. C. SCHWESINGER, *op. cit.*, p. 459. Read in this connection the critical article The Intelligence of the Classes, by P. A. Witty, in *Progressive Education*, 13: 597–602, 1936.

studies of such capable men as Galton, Woods, Goddard, Cattell, etc.? What fundamental errors, if any, were inherent in their methods of investigation?

2. What logical reasons can you give for the apparently conflicting evidence touching on the influence of formal schooling upon the intellectual status of both children and service men (soldiers)? To what extent do you think psychologically sound "systematic instruction" can influence I.Q. scores? Why?
3. Why, in your judgment, are the interpretations and emphases growing out of the Chicago and the California nature-nurture (foster-home placement) researches so different? Why should Burks be so impressed with the limitations apparently set by heredity when Freeman thought he found evidence for the superior efficacy of educational opportunities? Elaborate on your answer.
4. How would you defend the thesis that a blanket "superior" environment does not necessiarily provide the specific stimulating factors necessary to either general intellectual growth or specific test intelligence? What kind of environment would be suitable for such desirable outcomes?
5. How can it be that while in some cases identical twins, when reared apart, become unlike intellectually, in other instances they grow unlike temperamentally instead? To what extent do these findings argue for a casual connection between specific environmental patterns and the outcomes noted? Explain.
6. In view of the biological fact that the heritage of fraternal twins is no more identical than that of ordinary siblings how are we to explain the noticeably higher correlations among traits obtaining in their cases? How do you think the strict hereditarian would answer such a question?
7. How are we to explain the demonstrated fact of the consistently superior test-intelligence showing (averages) of urban children? Defend, first, the view that cities tend to "drain off" the cream of the rural stock and, second, that urban environments provide educational opportunities better calculated to stimulate intellectual ability. Which position appears to explain the facts better?
8. If intelligence tests measure native ability, how do you explain evidence from studies of "mountain hollow" children indicating that their I.Q's decline progressively from about ages four or six to ages nine or ten? Does such evidence disprove individual differences in native ability? Explain.
9. Present evidence damaging to the thesis that character, personality, and even intellectual ability are gene inherited and thus only slightly dependent upon external influences for their unfoldment. What is the basic fallacy in the unfoldment idea? Defend your answer from a biological standpoint.
10. Why are behaviorists and other environmentalists so opposed to the individual potentiality theory? On what experimental grounds can they prove their opposing contentions? Where do you stand on this question? Why?

11. Why is the question of the intellectual improvability of man such an important one? Is it not true that the race is sufficiently intelligent now for all practical purposes? Support your answer with evidence and sound logic.
12. What are the implications for individual personality of the notion of an intellectual caste system as being inherent in man's genetic constitution? What might be the undesirable results of adopting a fatalistic attitude toward the question of the educability of the personality?

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CHAPTER V

THE DYNAMICS OF PERSONALITY

The problem of human dynamics is one of the most intriguing in all personality study. Man perennially has been interested in locating the fundamental drives responsible for the incessant activity of all healthy human organisms. He wants to know what urges actuate the individual to strive as he does to get on in this none too benign world and to wrest from it its reluctant contributions to human welfare.

As in the case of the complex behavior responses that we have been calling intelligence, he has been very much inclined to seek for these dynamics of action in the preformed, inherited equipment of the newborn individual. For the most part, students of human nature cannot seem to get over their inclination to regard all characteristic forms of human behavior as essentially potential in the species. It is practically a major operation to induce them to look to the pressures of the environmental medium for an explanation of many of the almost universal dispositions observed in man. They are reluctant as well, to associate action with structural design, and as for learning, which certainly explains much of our behavior, it is often well-nigh forgotten.

I. THE PROBLEM OF "INSTINCTS" AS DRIVES

Early Conceptions of Human Motivation.—In early times prescientific man, who seemed unable to comprehend the tremendously illuminating principle of physical causation, endeavored to explain the material phenomena of nature by endowing inanimate objects with spirits said to be capable of actuating them in various uncontrollable ways. Thus grass grew by decree of the gods and storms arose at the caprice of imps. Such happenings as falling rocks or unintentional fires could be traced to the ill will of evil spirits. This naïve doctrine, called "animism," has not been confined to the ancients; in fact, in dressed-up forms, it is very much implied in dualistic theories which purport to contrast mind or spirit with matter and which endeavor to explain overt bodily actions in terms of immaterial spiritual influences. As Trow[1] puts it—"how spooks can move tables, so to speak, or how the mind can move its own body."

With the coming of tangible knowledge concerning the function of the human nervous system, it was only natural to discard animism in its crude form and to locate the elusive dynamics of behavior within its domain. Some were, however, unwilling to take such a materialistic step and proceeded to postulate the existence of an aggregate of innate immaterial driving forces capable of throwing the organism into action appropriate to the realization of their demands. Both groups, one stressing what it called "innate neural behavior patterns" and the other emphasizing "disembodied categories of force," called their supposedly unlearned responses by the now famous name, "instincts."

Since those days, practically every form of action observable in man and animal alike has been called instinctive by someone. Laymen and scholars alike have thought to put the minds of inquirers at rest through the naïve practice of explaining the complexities of human behavior by recourse to the magic word "instinct." Only recently has it occurred to some of the most thoughtful among us that complicated forms of behavior demand equally detailed descriptions in terms of the physical mechanisms and stimulating circumstances involved.

Lamarck was interested in instincts from the standpoint of his doctrine of biological transmission of acquired (learned) characteristics. He believed that thoroughly learned habits would be potential in the innate behavior patterns of succeeding generations. Darwin, as well, placed considerable credence in the idea of the inheritance of previously developed action traits in animals. The notion obviously fitted nicely into his theory of the survival value of adaptive forms of action. Other nineteenth century luminaries, such as Herbert Spencer, Lloyd Morgan, and W. Preyer, gave the instinct notion considerable favorable notoriety through their biological investigations. Preyer[2] actually published a psychological volume based on a detailed observation of the genetic development of his infant son during the first 3 years of life.

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[1] W. C. Trow, *Educational Psychology,* Houghton Mifflin Company, 1931, p. 24.

[2] W. Preyer, *Die Seele des Kindes,* 1881, 9th ed., Leipzig, 1923; translated by H. W. Brown and published as, *The Senses and the Will,* D. Appleton-Century Company, Inc., 1888.

Instincts in Modern Psychology.—In their more modern forms of specific inherited types of action, instincts were really formulated by William James.[3] Being interested in salvaging psychological concepts from the vague metaphysics of philosophy, he endeavored to find a tangible physiological basis for the urges of man. Associating instincts, in a general way at least, with central nervous system connections, he defined the former as "the faculty of acting in such a way as to produce certain ends, without foresight of the ends, and without previous education in the performance." James listed 28 instincts which ranged all the way from sucking and biting to jealousy and parental love.[4]

James's illustrious pupil Thorndike soon afterward greatly elaborated the instinct theory, associating it definitely with the operations of the nervous system and making an effort to apply its implications to educational practices. Years before the publication of his *Educational Psychology*, Thorndike[5] gave utterance to his views on the instinct problem in the following words: "We inherit certain connections between nerve-cells which make us act in certain circumstances in definite ways, without our learning how, or thinking about the matter at all, or hearing what we are going to do. . . . We call such unlearned activities, *instincts, or native reactions*. Such activities may appear before birth or at birth or be delayed until after birth." This early statement, which emphasizes the innate neural pattern conception of instincts, is practically the one in vogue today among most of those who still cling to the strict potentiality theory of personality.

In 1908, McDougall[6] became a leading disciple of the instinct doctrine, defining it as the "essential springs or native powers of all thought and action." Declining to regard instincts, as many others had done, as simply unlearned neural connections, this writer insisted that they were in reality innate driving forces or, as he puts it, "native springs of action." McDougall has always held to the philosophical doctrine of psychophysical interactionism, maintaining stoutly that independent mental forces are capable of influencing overt behavior in favor of activities designed to satisfy the demands of the processes (instincts) in question. Thus he has offered a list of instincts conceived of as innate mental driving forces each of which is colored by an emotional core. In view of the widespread acceptance once accorded this list, we shall present it here as formulated in 1923.[7] Each major instinct is accompanied by its emotional component:

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[3] W. James, *Principles of Psychology* (Briefer Course), Henry Holt & Company, 1892, p. 383.

[4] *Ibid.*, p. 403.

[5] E. L. Thorndike, *The Human Nature Club*, Longmans, Green & Company, 1900, pp. 27–28.

[6] W. McDougall, *An Introduction to Social Psychology*, John W. Luce & Company, 1908.

Parental—protective and tender feeling
Combat—anger
Curiosity—questioning attitude
Food seeking—appetite
Escape—fear
Gregariousness—loneliness
Primitive passive sympathy—shared feelings
Mating—sex feeling
Acquisitive—possessiveful
Constructive—feeling of creativeness
"Appeal"—distress
Laughter—amusement

McDougall believes that all social activities and political maneuverings for that matter are expressions of trends demanded by the major instinctive urges. He has even insisted that since all behavior is designed to satisfy the demands of instinctive drives, human action is in the last analysis directed by instinct appetite rather than by rational considerations.

Criticisms of Instinct Theories.—Owing to the prestige enjoyed by such instinct exponents as James, Thorndike, McDougall, and Woodworth, and to the relatively pioneer state of objective psychological study in the first two decades of the twentieth century the idea of innate unlearned behavior patterns eventually became very popular; in fact, it has been the orthodox doctrine as dispensed in normal schools as well as in liberal arts colleges. But as time went on the lists of alleged instincts became longer and longer until finally, as Symonds[8] has pointed out, "the elaborate theoretical structure broke beneath its own weight."

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[7] W. McDougall, *Outline of Psychology*, Charles Scribner's Sons, 1923, pp. 135–165.

One of the first thrusts came from Knight Dunlap[9] who, while acknowledging the probable existence of instinctive tendencies and activities, declared that the growing lists and classifications of specific instincts were clearly out of harmony with known physiological facts. Carr[10] added to the onslaught when, on the basis of comparisons among the lists, he disclosed the hopeless disparity and utter confusion involved. Then followed a veritable avalanche of criticisms and objections mostly from behaviorists and other avowed environmentalists who were extremely dubious of the whole innate-potential theory of personality. The nature and origin of these objections will be evident as we proceed with a presentation of the more outstanding instinct theories purporting to disclose the mechanisms of human dynamics. The classifications utilized have been adapted from those by Trow[11] and by Ragsdale.[12]

Instincts as Innate Pattern Reactions.—From a materialistic point of view this is the most satisfactory meaning of instinct available. According to its criterion instinct is merely a name for explicit reactions of physical structures as made possible by their mechanical design. In a strict sense, this constitutes a denial of the existence or presence of innate behavior tendencies of all kinds which are more or less independent of environmental influences. Behavioristic psychologists insist, and apparently rightfully so, that practically all the so-called "innate instincts" have been developed through the usual process of learning. In brief, those that appear at birth are the mechanically necessary reactions of neuromuscular structures as determined by the circumstances of the stimuli applied, while all subsequent responses are the same except as conditioned by learning.

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[8] P. M. Symonds, Human Drives, *Journal of Educational Psychology*, 25: 682–683, 1934.

[9] K. Dunlap, Are There Any Instincts? *Journal of Abnormal and Social Psychology*, 14: 307–311, 1919.

[10] H. A. Carr, *Psychology*, Longmans, Green & Company, 1925, pp. 380–393.

[11] W. C. Trow, *op. cit.*, pp. 15–22.

[12] C. E. Ragsdale, *Modern Psychologies and Education*, The Macmillan Company, 1932, pp. 86–97.

Kuo,[13] who has made a sweeping attack on the instinct concept, accordingly gives his conception of man's original equipment in these words: "The human infant is endowed with a great number of units of reaction. By units of reaction I mean the elementary acts out of which various co-ordinated activities of later life are organized." Incidentally Kuo's units of action, which constitute the only innate pattern reactions acknowledged by his position, are nothing more or less than the random motor responses characteristic of new born infants. As for the more elaborate postbirth responses he says, "If we watch the stages of development of human behavior closely enough, we shall not have any difficulty to trace the sources of social influences. To call an acquired trend of action an instinct is simply to confess an ignorance of the history of its development."

In direct harmony with these views, Watson[14] proposed the elimination of the entire instinct notion declaring that "Everything we have been in the habit of calling an instinct today is a result largely of training—belongs to man's *learned behavior*." As for original responses, such as feeding, smiling, respiration, and fear, love, and rage reactions, he says, "Can we not say that man is built of certain materials put together in certain complex ways, and as a corollary of the way he is put together and of the material out of which he is made—he must act (until learning has reshaped him) as he does act?" This is the behaviorist's mechanical view of behavior causation which, in reality, dispenses with a need for instincts as usually defined. It is strictly a monistic position which makes a clean sweep of teleological concepts as well as all vitalistic notions of planning or purpose. As Bernard[15] mentions, its physical causation principle explains original activities as the functioning of inherited structures. But in the end, it must be admitted that such a theory does not provide an explanation for the actual drives or dynamics of the human personality.

Instincts Conceived as Connate Responses.—According to this thesis, any organism responses appearing at birth may be called

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[13] Z. Y. Kuo, Giving Up Instincts in Psychology, *Journal of Philosophy*, 18: 645–664, 1921. See also, How Are Our Instincts Acquired? *Psychological Review*, 29: 344–365, 1922.

[14] J. B. Watson, *Behaviorism*, W. W. Norton & Company, Inc., 1930, Chaps. 5, 6. References on pp. 94, 112–113.

[15] L. L. Bernard, *Instinct*, Henry Holt & Company, 1924, p. 509.

"connate," *i.e.*, they may logically be regarded as unlearned or instinctive in nature. On the basis of the behavioristic arguments just mentioned, however, they could just as well be regarded as the response functions of inherited structures and thus not instinctive in the unlearned behavior pattern sense. The fear, love, and rage responses of Watson's experimental infants were not therefore necessarily instinctive. And, in so much as many older children do exhibit considerable fear of objects, such as furry animals and dark rooms which did not originally elicit such reactions, we can logically conclude that such so-called "instincts" are nothing more than *learned* responses. In fact, we can just about conclude that any behavior forms appearing subsequent to the birth event are so overplated with learning as to be out of the picture so far as instincts (as innate responses) are concerned. Nevertheless, Trow[16] believes that we should not overlook the possibility of the *maturation* of *instincts* in connection, for example, with sex responses and possibly in the case of an unlearned fear of the dark.

Gray[17] reasons with considerable logic that since the influence of environment as well as that of gene inheritance is present from the moment of conception in intra-uterine life, it is foolish to speak of any behavior forms in the infant as being innate. Nothing is innate in the sense of being uninfluenced by the modifying influences of the environment. To be sure there are numerous specific behavior patterns present at birth, but these were influenced by the prenatal environment just as later learned responses are influenced by postnatal influences. As Gray says, "If we call those formed before birth 'instincts' and those formed after birth 'learning' we have a distinction, to be sure, but one in name only." So it would seem that such a revised definition of instinct would be valueless.

And as for calling the bodily responses appearing at birth instincts, such a procedure not only fails to explain anything, but it actually serves "to push the mystery back a step." In other words, nothing is gained by offering an ambiguous word in lieu of a detailed description of the complex physical processes involved. Furthermore, the promiscuous use of nontechnical blanket terms tends to paralyse efforts at searching out the true mechanisms concerned. In short, involved processes are not explained by being labeled. As Wheeler[18] contends, the term "instinct," as an example, is not an explanatory concept.

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[16] W. C. Trow, *op. cit.*, pp. 17–18.

[17] J. S. Gray, *Psychological Foundations of Education*, American Book Company, 1935, pp. 69–71.

It would seem then that the connate-response theory of instinct can be adequately disposed of in terms of the neuromuscular structure-function hypothesis, also that all postnatal behavior ought logically to be regarded as learned responses founded upon the original units of structural action. On this basis, characteristic forms of behavior obtaining among near relatives need not be regarded as necessarily innate, except as structural similarities are involved. As for motivating dynamics, they are obviously not provided by the connate-response theory.

Instincts as Habit Compounds.—Most present-day psychologists, being sensitive to the modifying effects of early experience, believe that the typical so-called "instinct" is nothing more or less than a characteristic way of acting in roughly similar situations which has been learned through the process of making adaptations to the requirements of life. This conception is certainly a valid one, and would serve us very well if we would take the trouble to describe in detail the stimulating factors and concomitant organic responses involved in any given instance of so-called "instinctive behavior." It is evident, however, that the word "instinct" would not be a consistent one to use in connection with such an explanation since historically it has always had reference to adjustive behavior performed without conscious goals and without previous opportunity of having been learned. This is the meaning that we gather from the writings of James, Thorndike, and other leading instinct psychologists. Thus we could say that the habit-compound theory is really a polite way of ushering the whole instinct notion out of the human personality picture.

That the instincts as usually listed are adjustive responses picked up in the course of individual and social growth is, upon reflection, quite obvious. We say, for example, that everyone has an instinct in favor of self-preservation because the tendency to defend one's self against innumerable forms of danger is well-nigh universal. This is true, but we hasten to ask if newborn babies exhibit the same withdrawal behavior in the multitudinous and flexible ways characteristic of adults or even of children. The answer is obvious. About all they seem to fear is loud noises and other strong stimuli of a nature calculated to arouse a physically caused disturbance of the sensitive nervous system.[19] A young infant would let wild animals approach without objection, would be unconcerned at the approach of a heavy-moving object, and would have no fear of poisonous or death-dealing weapons. All concern about these and other dangers is in the nature of the case learned in the course of the evolution of meaning, in the development of discrimination of relationships. And adaptive ways of responding to varieties of stimulating conditions also belong in the category of learning.

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[18] R. H. Wheeler, *The Science of Psychology*, The Thomas Y. Crowell Company, 1929, p. 168.

This explanation would seem fairly adequate to account for the usual list of major instincts. At least, opponents of the strict innate-potentiality theory would think so. They would bring the same arguments to bear on fighting which evidently stands for a wide variety of complicated defense reactions almost all of which can only be attained through directed experience and all of which are beyond the ken of newborn infants. Even nursing (sucking) has to be learned, though in this instance the structural mechanisms involved are so admirably designed for their functions and the immediate results of successful response are so organically satisfying that the function in question is usually learned in a hurry. In this connection, it should be noticed also that learned habits, be they liquor drinking, industry in business matters, or justice in social relations, may take on a coersive nature comparable in urgency to that of native organic drives.[20] This fact, if appreciated, provides at least one clue to an explanation of the widespread tendency to ascribe all strong human urges to inherited constitution.

These and other considerations have led most objectively inclined psychologists to discard the theory of instincts as inherited behavior patterns. As early as 1922, Kuo[21] concluded that all human reaction systems are essentially learned integrations of original "unorganized and chaotic bodily movements —the units of reaction." Shortly thereafter Chapman and Counts[22] declared that "most of the instincts about which the social and educational psychologists write, and to which they trace the motivation of human conduct, are not unalloyed instincts at all, but rather behavior patterns created out of the original patterns—by the effects of a simple environment—an environment so necessary to life that it may be regarded as being approximately uniform for individuals." Since those days there has accrued a gradual abandonment of the traditional unlearned instinct theory.[23] As substitutes we have been turning to theories of maturation, to structure-function explanations, and to much discussion about fundamental drives, both innate and derived.

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[19] J. B. Watson, What the Nursery Has to Say about Instincts, *Pedagogical Seminary*, 32: 293–327, 1925.

[20] R. S. Woodworth, *Dynamic Psychology*, Columbia University Press, 1918.

[21] Z. Y. Kuo, How Are Our Instincts Acquired? *Psychological Review*, 29: 344–365, 1922.

Instincts as Innate Mental or Spiritual Forces.—A fourth and somewhat mystical theory of instincts is the one which regards them as innate, immaterial forces—the fundamental dynamics responsible for all human activity be it physical, social, or intellectual. According to the principal exponent of this doctrine, William McDougall,[24] not only our bodily activities but even the most abstract and supposedly rational thoughts are borne along on the crest of driving instincts, all being enlisted in an endless effort to satisfy the demands of these insistent impulses. As he further says, the removal of these instinctive dispositions would render the organism powerless to act.

As indicated previously, this doctrine involved us in a kind of glorified animism. What and where these dynamic entities are in the human organism is a problem for the more intrepid philosophers to concern themselves with. But McDougall has been primarily a philosopher, a leading advocate of psychophysical interactionism. His espousal of the doctrine of independent, immaterial mental forces has involved him in many a controversy—usually to his discomfiture, if his enemies are to be believed. First of all, such a doctrine perpetuates the scientific fallacy of assuming that a spiritual force, itself outside the circuit of physical cause and effect, can exercise a tangible effect on material substance (the body).

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[22] J. C. Chapman and G. S. Counts, *Principles of Education*, Houghton Mifflin Company, 1924, p. 65.

[23] As instances of this we might mention Woodworth's decision to eliminate the customary list in the 1929 revision of his well-known textbook on general psychology (R. S. Woodworth, *Psychology*, Henry Holt & Company, 1929.), also Thorndike's change of phraseology from *instincts* to *needs* or *wants* in his more recent writings (see E. L. Thorndike and A. I. Gates, *Elementary Principles of Education*, The Macmillan Company, 1929, Chap. 4).

[24] W. McDougall, *An Introduction to Social Psychology*, John W. Luce & Company, 1908, pp. 45–46.

Secondly, the theory assumes the innate potentiality of all behavior. It allows for the modifying effects of social experience but insists that even supposedly highly intellectual conduct is dictated by and instrumental in satisfying the basic instincts. This notion makes behavior purposeful (hormic) all right, but only in the sense of driving toward instinct-satisfying goals. In his presidential address before the American Psychological Association in 1910, Judd[25] took vigorous exception to this theory, contending that the mind of man can, through its intellectual processes, effect a grasp of the essential principles of social progress without necessarily submitting to the dictates of emotionally tinged innate driving forces. In short, whereas McDougall pictures behavior as irrational and somewhat hedonistic, Judd would make it rational and social. Furthermore, McDougall's belief that the dynamics of personality are active relatively independently of the details of environmental conditions runs counter to the more convincing principle that they derive their meaning from the mutual relations obtaining between the organism "set" in any given individual and the circumstances of the situation in which he is reacting.[26]

Believing that his list of emotionally cored instincts lay at the foundation of group, as well as individual, conduct, McDougall[27] proceeded, in the first decade of the present century, to formulate a theory of social psychology based upon his instinct doctrines. Sociologists had been at a loss to locate the influences responsible for the character of social institutions and, for a time, seemed to welcome the instinct idea as the answer to their quest. A number of them wrote books depicting the relation between innate driving forces and social and political movements.[28] But as Woodworth[29] brings out in his discussion of hormic psychology, discontent with the theory soon broke out among sociologists.

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[25] C. H. Judd, Evolution and Consciousness, *Psychological Review*, 17: 80–96, 1910.

[26] K. Lewin, *A Dynamic Theory of Personality* (trans. by D. K. Adams and K. E. Zener), McGraw-Hill Book Company, Inc., 1935, pp. 40–41.

[27] W. McDougall, *op. cit.*

One of the first to rebel was Bernard,[30] who, after making a study of the extensive literature on instincts, came to the conclusion that they were of minor importance in the interpretation of social action and that the whole instinct theory was just a lot of talk about relatively nothing. He reasoned that most behavior, which had been called instinctive by psychologists, was after all largely learned. As he saw it, such activities as acquisitiveness, parental care, mating, and curiosity (from McDougall's list) were complicated behavior systems acquired from social experiences. McDougall's instincts did not seem to Bernard at all adequate to account for the energetic activities of man; he looked rather to the stimulating influences of the social environment for the dynamic factors responsible for both individual and institutional development.

It is evident from the literature on the subject that the theory of instincts as spiritual driving forces has experienced rather rough sledding. This is not surprising in view of the metaphysical nature of these dualistic categories. Yet it will probably be a long time before the popular mind will give up intrenched—though unanalyzed—beliefs in such entities as "will power," "the mating instinct," "innate parental love," and the "instinct of gregariousness." Incidentally, although McDougall still believes that the nature of man is rooted in what he has been accustomed to call instincts, he has recently decided to give up the word as an explanatory symbol, contenting himself with the more acceptable practice of describing the propensities of the human personality in terms of the processes involved.[31]

Conclusions and Implications of the Instinct Concept.—In the end then it seems that there are no such inherited complex pattern reactions as have been subsumed under the instinct concept. Neither have we been able to demonstrate the existence of a collection of innate, immaterial driving forces such as dualistic philosophers and psychologists would honor with the same magic name. To be frank about it, the instinct theory has not provided us with a valid clue to the genuine dynamics of personality. It has merely made claims about alleged hereditary conduct potentialities practically all of which can now fairly adequately be explained in terms of "learned integrations" built upon original simple units of structural response. Animals may be born with some relatively preformed patterns of action (although they too respond in variable ways demanded by the exigencies of situations) but in the infinitely more pliable human species the factors of social pressure and capacity for intelligent adaptation leave little need for dragging in the much overworked innate-instinct idea.

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[28] See, for example, S. Eldridge, *Political Action*, J. B. Lippincott Company, 1924.

[29] R. S. Woodworth, *Contemporary Schools of Psychology*, Ronald Press Company, 1931, pp. 193–199.

[30] L. L. Bernard, *An Introduction to Social Psychology*, Henry Holt & Company, 1926, pp. 138–139.

[31] W. McDougall, *The Energies of Men*, Charles Scribner's Sons, 1932, pp. 76–78.

Stroud,[32] who believes that the more distinctly human traits which distinguish man from the lower animals are acquired by way of social intercourse and intelligent adjustment, advocates a discontinuance of the instinct concept in human psychology. After discounting the arguments in favor of the existence of innate social tendencies, he concludes that "*society can choose that culture which makes for the best social order, and education can attempt to achieve that end without regard to the social instincts of man.*" Wheeler,[33] writing from the *Gestalt* viewpoint, which stresses the intelligent goal-seeking responses of the total integrated organism, objects particularly to the notion of stereotyped preformed pathways as promoters of full-fledged but unlearned performances. As he puts it, "This involved the implication that without knowing how to carry out the act in question the organism knew how to do it! A curious paradox!" Thus he too would give up instincts. Incidentally, these quotations are indicative of the general trend among thoughtful environmentalists.

It is clear that we will have to look for an explanation not only of personality dynamics but of routine behavior as well in domains other than those formerly subsumed under the instinct theories. It is to these that we shall now address ourselves. In the meantime, it might be well to remind the student that he would be in error in assuming that man's native endowment, whatever it is, is of no particular consequence in the development of subsequent personality traits. We shall endeavor to bring out some more enlightening material on this point as we proceed.

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[32] J. B. Stroud, *Educational Psychology*, The Macmillan Company, 1935, pp. 26–29. Quoted by permission of the publisher.

[33] R. H. Wheeler, *op. cit.*, pp. 167–172.

Finally, we should like to say that the somewhat detailed discussion of instinct doctrines just concluded was not offered on the basis of the present importance of the subject but rather because of the tremendous influence that the concept has exerted upon educational theory and practice in the immediate past. It seems consistent to advocate much caution in attempting any educational or personality-development program founded on the dubious concepts of instinct psychology. G. Stanley Hall tried to do so and got us into plenty of trouble with his theories of catharsis, recapitulation, saltatory development, etc. Contemporary educators are not likely to succeed any better on such a platform.

II. THE STRUCTURE MATURATION THEORY

Origin of the Structure-function Idea.—In an effort to hasten the demise of the instinct explanation of human nature, some very competent biologists and psychologists have developed a novel proposal which in some ways meets the objections usually advanced against instincts, but which in another sense amounts to an equally flexible theory associated with a similarly ambiguous "explanatory" title. We have reference to the now well-established (in the sense of being popular) theory of *maturation.* According to its premises, neuromuscular and even verbal functions appear in the growing organism of an animal or human in a sequence and at a rate directly commensurate with the growth of such structures as are concerned with making possible their appearance. This is comparable to saying that the normal functions (behavior forms) of the body can only appear as the life processes, which further structural growth toward maturity, go forward.

In the neuromuscular realm, this structure-function relationship seems valid enough. Its real shortcomings are not apparent until a scrutiny of the literature reveals the fact that in the interpretations of some it has been made to usurp credit for development a considerable share of which could, and perhaps should, be assigned to the ever-present learning process. As we have repeatedly emphasized, many people seem to have a strong penchant for extolling the efficacy of innate potential powers and an equally persistent tendency to minimize the effects of environmental pressures. As for structure-function theories in the domain of intellectual growth, the reader is referred to Chap. III, where the whole question of mental maturation was expanded in some detail.

Before proceeding with an analysis of maturation theories, it may be well to point out that while the structure-function sequence idea as applied to the appearance of overt behavior probably is an improvement over the notion of instincts as specific inherited behavior patterns, it does not provide an answer to our quest for the real motivating factors—that is, the dynamics—of personality. It may tell us in what order behavior functions appear and what direction they take, but it does not answer the fundamental question of *why* they arise at all. An attempted answer to this query remains for a later section.

Mechanistic Structure-function Theories.—If we consult biologists about this matter of organic behavior, we find them in substantial agreement that it is essentially a property or function of organic structure. They would say further that the nature of behavior is strictly a concomitant of the mechanical design of the structures concerned as well as the degree of maturation attained by them. It is a fairly well established axiom of science that in both organic and inorganic realms patterns of action are determined by the material specifications of the structures stimulated. Of course, behavior is taken to mean more than observed gross movements. As Herrick[34] says, "The term 'behavior' usually refers to those visible movements of the body or its parts; but the invisible chemical, electrical, and other changes are just as truly behavior of the living substance as is our running to catch a train."

In writing on this theme, Newman[35] states that "Structure is meaningless without function, and *vice versa.* In the last analysis, function determines structure, and structure in turn conditions function. The two are merely parts of the same thing, opposite sides of the coin." Coghill,[36] who is so well known for his extensive work with *Amblystoma* and his emphasis on maturation, is emphatic in his belief that organism mechanisms are but "the structural counterpart of the forms of the behavior pattern." This thesis is concurred in by Child,[37] who insists that organismic behavior represents a reflection of the mechanisms present in the reacting organism.

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[34] C. J. Herrick, *The Thinking Machine,* University of Chicago Press, 1929, p. 70.

[35] H. H. Newman, *Outlines of General Zoology,* The Macmillan Company, 1924, p. 54. Quoted by permission of the publisher.

Even educational philosophers may prefer this tangible explanation to the old innate-instinct theory. Witness the conclusions reached by Chapman and Counts[38] who, after declaring that man is born into this world with structural mechanisms which when stimulated cause him to make characteristic responses to a variety of situations, declare that "The colorless phase—a set of the structure—gives a much truer account of the nature of the instinct than do the statements of many authors who write almost as though the instincts were disembodied forces which, by some miracle, control the behavior."

But a more critical issue arises when we inquire as to how these complicated organic structures of ours are thrown into action. Whatever their degree of maturation, they must be stimulated to motion by some form of tangible causation. The question arises whether the causal factor (or factors) is resident within or without the physiological unit which we call "man." In other words, is behavior mechanistic or vitalistic? To the strict mechanist, who regards the human organism as being in direct dynamic equilibrium with the environment, behavior would, in the nature of the case, represent a series of "energy exchanges" and would be caused by external and intraorganic stimuli.[39] As Newman[40] says, with commendable reserve, "The mechanistic or machine theory of living beings is not fully established, and it may not be adequate or even true; yet until every other possibility has been really exhausted scientific biologists should hold fast to the working program that has created the science of biology. The vitalistic hypothesis may be held as a matter of faith; but we cannot call it science without misuse of the word."

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[36] G. E. Coghill, *Anatomy and the Problem of Behavior*, The Macmillan Company, 1929, p. 105. Quoted by permission of the publisher.

[37] C. M. Child, *Physiological Foundations of Behavior*, Henry Holt & Company, 1924, p. 9.

[38] J. C. Chapman and G. S. Counts, *op. cit.*, p. 56.

[39] A. P. Weiss, *A Theoretical Basis of Human Behavior*, R. G. Adams and Company, 1925, Chap. 2.

[40] H. H. Newman, *op. cit.*, p. 47. Quoted by permission of the publisher.

So we see that, according to the machine theory of physiological psychology, organic behavior is a function of structural organization as influenced by environmental excitations. The human individual is an organic object buffeted about by the mechanical push and pull of stresses incidental to the degree of equilibrium obtaining between it and the milieu which envelops it. As for the dynamic properties of the personality, they must be self-generating in the behaving structures or, better yet, in the deterministic relationship existing between the "set" of functioning structures and the circumstances of specific environmental situations encountered. This line of logic, which inevitably ends up with a postulation of man as a biochemical unit, is admittedly scientific, and it may satisfy the requirements of the physical laws of lever movements, but it falls far short of satisfying the most liberal vitalists.

The Vitalistic Approach to the Structure-function Problem.—It seems only fair to include at this juncture a brief statement touching on the refutation that vitalists would surely want to make to the scientific assumptions of their friends the materialists. In the first place, many of them would hasten to claim that the factor of purpose must always be taken into account in an appraisal of the behavior of human beings. They would insist that even a cursory examination of the facts involved indicates that behavior, instead of being strictly deterministic and predictable, is always enlisted in behalf of the consummation of purposive goals. Schoen,[41] for example, in commenting on the unpredictability of behavior in living creatures of any kind declares that "This inability to tell 'which way the cat will jump' is due to the presence of purpose. We can predict what a machine will do simply because it has no purpose and hence does not adapt means toward an end. But we cannot predict, we can only guess what an animal will do, specifically, unless we know what it is after."

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[41] M. Schoen, *Human Nature*, Harper & Brothers, 1930, pp. 95–102. Reprinted by permission of the publisher.

This is what would ordinarily be called the "common-sense view," and, although it is dualistic and consequently of questionable scientific validity, it takes into account the irrepressible factor of teleology (choice and purpose). Incidentally, vitalists are not bashful about mentioning the possibility that science, in spite of its worship of Lloyd Morgan's law of parsimony, does not necessarily have the last word on the ultimate nature of reality.

Turning again to Melvin's[42] writings, we find personality endowed with a vitalistic factor called the "life force." The nature of this force is not at all clear, but it is said to be the dynamic driving factor which makes the human personality self-determining. Thus Melvin decries the tendency of "thoughtless" mechanists to regard behavior as a function of alleged self-generating structures alone. To him, all adaptive action must be ascribed to the vital life force which is as truly real as are gravity and electricity. Thus this writer regards the bodily or structural aspect of personality as merely the mechanism by means of which the real dynamic life force makes itself manifest. This personality, while dependent upon the relationships which exist between it and the demands of the environment to which it reacts is, however, free in its choice life and ultimately capable of controlling the circumstances of its surroundings.

This is the creed of the vitalist who chooses to maintain a belief in freedom of choice even at the expense of being regarded as mysterious and unscientific. To him, behavior is neither instinctive nor mechanistic, it is purposive, being directed by a self-determining dynamic force which is unknown to man simply because he is not able to detect its existence with his present instruments of observation. This doctrine takes cognizance of the mechanical laws of causation but claims that a wider hypothesis explanatory of human action must be sought that includes the facts of both spiritual and material phenomena. So while mechanists accuse vitalists of violating the principle of parsimony (introducing mysteries into natural phenomena), vitalists in turn point an accusing finger at materialists for perpetrating the fallacy of oversimplification (leaving out of account important factors because they are not amenable to causal explanations).

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[42] A. G. Melvin, *Building Personality*, John Day Company, Inc., 1934, pp. 45–50.

It must be admitted that the life force doctrine sounds suspiciously like McDougall's disembodied instincts which we took such pains to dispose of, but which, like the proverbial bad penny, invariably bob up again. However, if competent scholars, after thinking the matter through, still prefer to believe in a dualistic vitalism, that is certainly their privilege, and it is not particularly becoming to the rest of us to assume a holier-than-thou attitude. Certainly no one has a corner on ultimate knowledge.[43]

It seems inevitable that disagreement on this involved issue should arise. Some by chance approach psychological study by way of social and philosophical avenues thus becoming indoctrinated along the way with exhilarating theories of personal freedom, while others happen to come under the tutelage of scientific men who plunge them into the rigors of physical causation principles with the frequent result that they become imbued with scientific fervor. Thus we have all been the victims, more or less, of the intellectual mores which we have encountered. Being unable to pull outselves—by the bootstraps, as it were—out of the intellectual cultures that have enveloped us, we conjure reasons for the validity of our preconceived beliefs. Is it any wonder that we disagree with each other?

Current Maturation Theories.—Having presented a brief résumé of the structure-function idea in its two most important aspects we must now turn to a consideration of its relation to the popular notion of "maturation" of sensorimotor, liguistic, and emotional behavior. The instinct psychologists had much to say about the appearance of behavior patterns presumably little influenced by systematic experience. Now that instincts have gone out of style in polite psychological circles, an appreciable group of workers believes that it has found a more defensible theory of behavior development, if not actually a foundation of dynamics, in the principle of structure maturation. In short, as the inner and outer structures mature, the functions potential to their mechanical organization make their appearance in an orderly fashion and quite independently of environmental influences. As Allport[44] put it some years ago, "It is . . . theoretically admissible that traits of behavior which make their first appearance during infancy, childhood, or youth may result from the 'ripening' or maturing of truly innate coordinations of reflexes, and not from experience. We may call this view the *maturation hypothesis.*"

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[43] In a recent address Winter has contended with considerable logic that the breakdown of mechanistic axioms in the physical sciences has opened the way for a reintroduction of vitalistic principles. He sums up by saying, " . . . but the disconcerting conclusion that what was formerly considered predictable within the narrow confines of carefully sifted principles has now in some important instances been proven to be non-predictable, and only probable or possible." Winter refers to Andrade's (E. N. De C. Andrade, *The Mechanisms of Nature*, London, G. Bell & Sons, 1932, p. 125) statement that according to the quantum theory we cannot predict the behavior of a single electron—we cannot tell at any instant what it will do next. He also points out the fact that determinism has faded out of physics (The Decline of Determinism, *Annual Report of Smithsonian Institute*, 1932,

This sounds very much like the old instincts, especially the concept of "delayed instinct,"[45] except that some of the former mystery has been painlessly removed by correlating behavior with physical mechanisms of varying degrees of maturity. Controversies relating to the maturation theory usually hinge on the question of the importance that should be assigned to the learning process, which factor is obviously inextricably bound up with the growth process. As has been repeatedly mentioned, the developing organism is, from the moment of conception, enveloped in an environmental medium from which it can, in the nature of the case, never be separated and which is constantly impinging modifying influences upon it. Nevertheless, maturationists can produce considerable evidence indicative of the powerful regulatory mechanisms implicit in the growing human organism. These gentlemen differ, however, in the efficacy which they are willing to ascribe to learning.

Maturation Experiments at the Yale Psycho-Clinic.—Since Gesell is generally acknowledged to be the titular head of the

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p. 141). Thus he argues that the trend of scientific postulates is (1) from axiom to hypothesis, (2) from absolute to relative, (3) from determinism to indeterminism, (4) from predictability to probability, and (5) from pure objectivity to recognition of the subjective. Reasoning from this development in the physical and possibly biological sciences, Winter concludes that psychology has no logical ground upon which to stand in postulating a mechanistic interpretation of human behavior (J. E. Winter, The Postulates of Psychology, *Psychological Review,* 43: 130–148, 1936).

[44] F. H. ALLPORT, *Social Psychology,* Houghton Mifflin Company, 1924, p. 44.

[45] P. A. WITTY and H. C. LEHMAN, The Instinct Hypothesis Versus the Maturation Hypothesis, *Psychological Review,* 40: 33–59, 1933.

maturation group, we may as well illustrate the cardinal principle of the theory by referring to his outstanding work. And since Gesell[46] so often expounds his doctrines in connection with the controlled study of infant sisters *T* and *C* we shall do likewise. Careful measurements revealed the fact that at forty-six weeks these identical tots were thoroughly similar in both mental and physical characteristics, thus being ideal subjects for one of Gesell's famous co-twin controlled experiments. In essence, this means that since the infants were alike in practically every way, one could be subjected to training while the other acted as a control, thus giving significance to later comparisons between them.

Accordingly twin *T* was given systematic training in stair climbing ten minutes daily for a period of six weeks. At the conclusion of this course, when she was fifty-two weeks (one year) of age, she was said to be a "relatively expert climber." At this point, the untrained twin *C* could not, even with assistance, scale the stairway, although 1 week later she maneuvered the steps without help and without training. The twin *C* was given a 2 week's course in climbing which culminated when both youngsters were fifty-five weeks old. In the end, as motion pictures showed, twin *C*, after only two weeks of training was as expert as her sister *T* who had enjoyed 6 weeks of practice. The critical point is, of course, that *C*'s training, though relatively short, was instituted several weeks later than *T*'s, thus giving the maturation process an opportunity to register its effects. *T* had been trained three times as long as *C*, but her advantage was easily compensated for by the latter's few weeks of added age.

From this and other similar experiments, Gesell[47] concludes that the form and efficiency of an infant's patterns of behavior are "almost purely a function of the maturation of appropriate neural counterparts." In speaking of the resistence of a child's cube-manipulation behavior to the effects of training and conditioning, he states his position clearly as follows "These patterns are basically under the stress and regulation of the intrinsic organic factors of maturation." This psychologist is not blind to the power of educational influences, admitting freely that we cannot look for such learnings as the vernacular, for example, in gene equipment, and that personality organization is sensitive to the modifying effects of the milieu; but he insists that we are prone to overestimate the "plasticity" and "conditionality" of infants. "He [the infant] grows in accordance with endowment as well as environment. Training cannot transcend maturation, but must respect it." It is apparent then that to Gesell maturation is a regulatory mechanism, an intrinsic stabilizing factor, which ensures a balance in behavior and which gives direction to the growth trend.[48]

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[46] A. G. Gesell and H. Thompson, Learning and Growth in Identical Infant Twins: An Experimental Study by the Method of Co-twin Control, *Genetic Psychology Monographs*, 6: 1–123, 1929. See as well, The Individual in Infancy, in, *The Foundations of Experimental Psychology*, Clark University Press, 1929, pp. 628–660.

[47] A. G. Gesell, *The Study and Guidance of Infant Behavior*, in *Psychology at Work*, P. S. Achilles (Ed.), Whittlesey House, McGraw-Hill Book Company, Inc., 1932, pp. 42–43.

That the maturation process applies to language development as well as to manual behavior is attested to by another co-twin study conducted in the Yale Psycho-Clinic and with the same twins—*T* and *C*.[49] Twin *T* was given 5 weeks of training in vocabulary, beginning at her seventy-fourth week. Twin *C* entered upon 4 weeks of training beginning at age eighty-nine weeks. It seems that twin *C*, working under a 5-week handicap, came out practically even with her twin in the end. Strayer says that "not only was training which was begun with a maturational advantage of five weeks more effective than earlier training, but the pattern of response was more mature." In this case, it is apparent again that training (learning), while effective, was not able to transcend the maturation factor.

Evidence for Emotional Maturation.—As a matter of fact, there is evidence pointing to the progressive influence of maturational factors in the realm of emotional development. In spite of Watson's[50] sweeping generalization (based upon experiments to be reported in a later chapter) that all fears (except loud noises and loss of support) are built into the personality through the process of emotional conditioning—being absent in the new born infant—a number of investigators have obtained results indicating that fear at least appears upon the basis of regular maturational sequence when appropriate conditions of observation are set up.

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[48] A. G. Gesell, *The Guidance of Mental Growth in Infant and Child*, The Macmillan Company, 1930, pp. 291–292. Quoted by permission of the publisher.

[49] L. C. Strayer, Language and Growth; The Relative Efficiency of Early and Deferred Language Training Studied by the Method of Co-twin Control, *Genetic Psychology Monographs*, 8: 209–319, 1930.

[50] J. B. Watson, *Psychology from the Standpoint of the Behaviorist*, J. B. Lippincott Company, 1919, Chap. 6.

Jones found,[51] for instance, that when a fear stimulus in the form of a snake presented in a suitcase is shown to children of various ages, youngsters two years of age and under manifest no fear response, those from three to three and a half years advance with caution making hesitating touches, while those four years and upward display very definite fear responses (especially the adults). H. E. Jones[52] has elsewhere interpreted this progressive fear reaction "as a result of a general maturation of behavior, which leads to greater sensitiveness and more discriminatory responses." He also says, "Fear arises when we know enough to recognize the potential danger in a situation, but have not advanced to the point of a complete comprehension and control of the changing situation."

In studying the differential emotional behavior of infants of progressively higher ages, Gesell[53] secured results similar to the above findings. When children of increasingly higher ages were confined (one at a time), in a small enclosure open at only one end, they displayed progressively intense emotional reactions in the following gradations: (1) no disquietude, (2) mild disquietude, (3) robust disquietude. Gesell concludes, "Is not this a genetic gradation of fear behavior which is based upon maturational sequence rather than upon an historical sequence of extrinsic conditioning factors? Such factors may account for specific aspects of fear behavior, but not for the organic pattern beneath such behavior."

Maturation in the Animal Realm.—In the animal world, corroborating evidence favorable to the maturation thesis has apparently been piling up for some time.[54] As early as 1873,

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[51] M. C. Jones, The Conditioning of Children's Emotions, in (C. Murchison, Ed.) *A Handbook of Child Psychology*, Clark University Press, 1931, Chap. 3.

[52] H. E. Jones, The Retention of Conditioned Emotional Responses in Infancy, *Journal of Genetic Psychology*, 37: 485–498, 1930.

[53] A. G. Gesell, *op. cit.*, p. 290. Quoted by permission of the publisher.

[54] A more complete review of this material may be found in P. A. Witty and H. C. Lehman, *op. cit.*

Spalding[55] concluded that birds develop flying ability as a result of the maturation of the physical structures necessary for flight. Yerkes and Bloomfield,[56] from a study of kittens, decided that mouse chasing is essentially a well-coordinated response made possible by the maturation of appropriate structures. In the case of salamanders, Carmichael[57] observed what he regarded as spontaneous swimming behavior appearing without benefit of external stimulation.

Coghill[58] studied *Amblystoma* extensively and appears convinced that the maturation of organic factors portends the regular appearance of their functional counterparts. His conclusions are well worth noticing:

"1. The behavior pattern develops in a regular order of sequence of movements which is consistent with the order of development of the nervous system and its parts.

"2. In a relatively precise manner, physiological processes follow the order of their embryological development in the function of aquatic and terrestrial locomotion and feeding.

"3. Behavior develops from the beginning through the progressive expansion of a perfectly integrated total pattern and the individuation within it of partial patterns which acquire various degrees of discreteness."

So we see that, according to a number of investigators, maturation scores highly as the answer to our quest for the factor or factors responsible for the appearance of well-coordinated responses. The evidence thus far seems quite convincing although we cannot help but feel as though there is a missing link somewhere when the experiential factor is so lightly brushed aside. Motor, speech, and social behavior may appear in a systematic sequence as Shirley[59] and others have shown, but, when workers, other than avowed maturationists, are heard from, we doubt very much whether the enthusiasm (for their interpretations) displayed by the developmentalists will appear entirely warranted.

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[55] D. A. Spalding, Instinct with Original Observations on Young Animals, *Macmillan's Magazine*, 27: 282–293, 1873.

[56] R. M. Yerkes and D. Bloomfield, Do Kittens Instinctively Kill Mice? *Psychological Bulletin*, 7: 253–263, 1910.

[57] L. Carmichael, A Further Study of the Development of Behavior, *Psychological Review*, 35: 253–260, 1928.

[58] G. E. Coghill, *Anatomy and the Problem of Behavior*, The Macmillan Company, 1929, p. 36. Quoted by permission of the publisher.

[59] M. Shirley, The Sequential Method for the Study of Maturing Behavior Patterns, *Psychological Review*, 38: 507–528, 1931.

Evidence for the Influence of Learning.—Judging from the line of evidence dispensed by maturationists, one is led to believe that infants are endowed with "elaborate reportoires for action" that respond automatically when set off by specific stimuli. That this is by no means an invariable principle is indicated by the findings of investigators working at the Ohio State University.[60] They found that even such a simple reflex as sucking is not constitutional in newborn infants in the sense of being a stereotyped and invariable response to a specific stimulus. Results of their careful work show that "stimulation of the lips of a new born infant is followed by the sucking reaction in over 90 per cent of the infants of a given age, but a stimulation of the cheeks, eyes, temperature, taste, smell, and so forth, will also produce it. . . . That is to say, sucking is a specific reaction to stimulation of the lips, but it is a reaction to many other stimuli also." The singular fact that struck these investigators was their observation that stimulus-response connections may be variable enough to permit any stimulus to release any action. This principle is almost diametrically opposed to the theory of maturation defined as the process of growth by which well-integrated behavior appears without special training and as a result of specific stimulation.

The Shermans secured results with infants which led them to deny the validity of the notion that responses automatically mature. They found that many reflexes are dependent for development upon practice as well as upon growth and that an appropriate environment is imperative to their effective functioning. These investigators reason that, although structure obviously matures, activities become better coordinated through practice. As a result of finding that the trial-and-error responses of infants can be made relatively more adequate by more rapid stimulation than is usually encountered, the Shermans[61] contend:

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[60] K. C. Pratt, A. K. Nelson, and K. H. Sun, The Behavior of the Newborn Infant, Ohio State University Studies, Graduate School Series, *Contributions in Psychology*, no. 10, Ohio State University Press, 1930, pp. 210–211.

[61] M. Sherman and I. C. Sherman, *The Process of Human Behavior*, W. W. Norton & Company, Inc., 1929, pp. 62–84.

"This indicates that many of the responses usually attributed to organic maturation are in reality products of learning, since such a speeding up of adaptive behavior could not take place were maturation necessary for its growth." It is evident that these workers reject maturation as a major explanation for the growth of efficient activities. Their data point to the superior efficacy of learning as far as the development of adaptive behavior is concerned.

In experiments dealing with the genetic development of behavior in the lower animals, we find evidence as well for the potency of environmental influences. Kuo's[62] study of the rat-chasing proclivities of kittens is illustrative. His kittens were reared in a laboratory under varying conditions. One group was not permitted to see rats or know that they existed; a second group was given rats or mice as companions; and a third group was permitted from the first to witness their mothers kill rats. For comparative purposes some of the kittens were given a vegetarian diet while others indulged in morsels of fish and meat in addition to their regular milk and rice. Of the kittens reared away from rats, 43 per cent proceeded to kill the rodents by the time they (the kittens) were four months of age. In the group which saw their mothers kill rats, 85 per cent did the same thing when stimulated. Unfortunately for instinct enthusiasts, none of the kittens previously reared with rats killed any of those with whom they had been associated. The vegetarian kittens turned out to be as efficient rat killers as the others, but most of them did not eat the rats they killed.

So far as these data are concerned we see that while cats are endowed with a mechanical make-up admirably designed for hunting such small animals as rats and mice, whether or not they eventually do so depends on the presence or absence of such rodents in their early environments. Contrary to popular belief kittens evidently do not possess inevitable innate tendencies to hunt and kill smaller creatures. Kuo sums up the matter succinctly when he says, "Our study shows that kittens can be made to kill a rat, to love it, to fear it, or to play with it." It will be recalled that Yerkes and Bloomfield put a different interpretation on the results of their study of kittens, believing that they display well-integrated innate responses toward mice. It should be mentioned, however, that others, Dashiell,[63] for example, conclude from Yerkes and Bloomfield's own data that the behavior of the kittens in question could logically be attributed to learning.

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[62] Z. Y. Kuo, The Genesis of the Cat's Responses to the Rat, *Journal of Comparative Psychology*, 2: 1–35, 1930.

Criticisms of the Maturation Theory.—It is apparent from the foregoing discussion that we are face to face as usual with the age-old problem of nature vs. nurture. It seems as though the rest of the major problems of personality would be more amenable to solution if we could only get this one in shape so that it would not continually bob up. But when we consider the inseparable character of the nature-nurture fusion, it is obvious that no satisfactory solution is likely to be forthcoming.[64] Advocates of the maturation theory argue that potential inherited patterns provide our repertoire of adaptive responses. To them the influence of experience is only superficially directive, not fundamental to the appearance of the basic patterns. As Witty and Lehman[65] rightfully say, in their zeal to discredit the term 'instinct,' they have merely substituted another term—maturation—for much the same inheritance dogma formerly subsumed under the now odious instinct title.

Dyed-in-the-wool environmentalists not only deny the potency of original tendencies and constitutional mechanisms, but go so far as to attempt a distinction between so-called "learned" and "unlearned" reactions. The futility of this suggestion should be quite apparent. Certainly the great majority of our acts are influenced by both inherited tendencies due to structural design and to the ever present pressures of the environment. We are not likely to get any nearer an ultimate solution of the problem by substituting "maturation" for "instinct,"[66] or by attempting to make a distinction between "unlearned" or "instinctive" and "acquired."

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[63] J. F. Dashiell, *Fundamentals of Objective Psychology*, Houghton Mifflin Company, 1928, pp. 190–192.

[64] The most recent attack on this general problem is being made from the statistical angle. See for example, F. K. Shuttleworth, The Nature Versus Nurture Problem, *Journal of Educational Psychology*, 26: 561–578, 1935, and Part II, pp. 655–681. Also B. S. Sanders, *Environment and Growth*, Warwick & York, 1934.

[65] P. A. Witty and H. C. Lehman, *op. cit.*, p. 57.

[66] J. B. Watson, who disagrees emphatically with Gesell's interpretations, declares that the word "maturation" is not at all clear to him (*Behaviorism*, W. W. Norton & Company, Inc., 1930, p. 204).

Recognizing the fact that we cannot isolate the inherited factors in personality make-up nor compute the relative efficacy of maturation vs. experience, would it not be better to say that adaptive behavior appears fundamentally (as a basic pattern) as a function or counterpart of concomitantly mature organic structure, but that the details of its expression, to some extent the time and sequence of its arrival, and its degree of alignment with the mores of its social group are all the results of modifying effects of the environmental medium, *i.e.*, of *learning*. Maturation and learning are thus not two contrasted influences, they are names for two aspects of an inseparable fusion whose composite effect makes itself felt at the moment of conception. Incidentally, we should recognize that the very structural mechanisms essential to the subsequent appearance of all forms of behavior are themselves dependent for stimulation to growth upon the environment in which they are imbedded.

In the meantime, it should be noticed that, unless we recognize the vitalists' mysterious life force or the structure-function advocates' dynamic relation between structure "sets" and environmental stimuli, we have not as yet come upon the real driving forces or dynamics of the human personality. It is to a further quest for this factor in man that we now turn our attention.

III. FUNDAMENTAL NEEDS AS DRIVES

It is a singular fact that through the maze of the older instinct psychology the living individual was for the most part regarded as a more or less independent unit, disinterested in action except as he was stimulated to movement by environmental attractions or forced into characteristic responses by virtue of the driving instincts. This view provided no true avenue to a dynamic principle of action; it did not offer a satisfactory explanation to the question of why we behave as we do, why we eat, drink, love, fight, play, work, or strive so vigorously to get on in the world. In short, the bare stimulus-response hypothesis, even when buttressed by innate-behavior pattern and structure-function theories, did not solve the problem of "drive," or, as we have been putting it frequently, it did not put us in the clear in our quest for the true dynamics of personality.

Behavior as Stress-relieving Activity.—More recently we have come to realize that man's behavior is a reflection of his striving for various forms of satisfaction. One does not have to be an avowed behaviorist to observe that the individual is after all in dynamic relation to his environment, being to a large extent dependent upon it for those organic and social satisfactions which the very nature of his organism demands for its integrity. To be explicit, man has certain legitimate *wants* or *needs* which in the nature of the case give direction to his actions and which explain in the fundamental sense, why he acts at all. As Thurstone[67] puts it, "It is this shift of interest from the stimulus-response relation to the wants of the living self that marks the fundamental difference between what we know as the old and the new in psychology." In discussing this question of the original nature of man, Chapman and Counts[68] long since expressed the same principle when they declared, "Man spends all his days in a valiant struggle to satisfy his imperious wants. On entering the world the first inner tension is relieved by crying; he eats, drinks, fights, loves, mates, and thinks to relieve other tensions; and on his death bed, in the act of blessing his family, he relieves a last tension."

It would probably be fair to say that it is these related concepts of fundamental *wants* and organism *tensions* that have led us to a conception of human dynamics that bids fair, in the light of present knowledge, to supersede all others in logical validity. If man is characterized by a variety of basic "needs" which demand satisfaction, their frustration will obviously set up desires or tensions of various kinds which call for release or, we might say, restoration to equilibrium. This line of reasoning indicates then that the individual is literally driven to action in favor of responses calculated to relieve his strains and stresses; it suggests that he must strive for a balanced realization of his life needs in order to prevent personal disintegration. As the German psychologist Lewin,[69] says, when an individual's state of equilibrium has been disturbed at any point, a new process of response in the direction of a new state of equilibrium is sure to set in.

[67] L. L. Thurstone, *The Nature of Intelligence*, Harcourt, Brace & Company, 1924, pp. xiii–xiv.

[68] J. C. Chapman and G. S. Counts, *op. cit.*, p. 55.

[69] K. Lewin, *op. cit.*, p. 58.

The same principle is expressed by Carr[70] in his excellent discussion of the concept "motive" which he defines as "a relatively persistent stimulus that dominates the behavior of an individual until he reacts in such a manner that he is no longer affected by it." Carr's "motive" is practically synonymous with our terms "needs" or "wants" and indicates again the principle that the normal individual, when under stress of insufficient satisfaction of legitimate organic or social needs, seeks realignment by responding in a manner commensurate with the exigencies of the situation.

A cynic might be inclined to remark that this glib-appearing explanation sounds suspiciously like a resuscitation of the despised instinct, but we can say in its favor that it has its bases in observable processes of organic structure or in learned forms of behavior presumably designed to assist in the satisfaction of physical cravings. It claims no mystic origin or unlearned potentialities, being, rather, an expression of the manner in which the organism responds to deprivations in terms of its mechanical make-up and biosocial processes.

Development of the Fundamental-drive Concept.—Although a chronological study of the rise and progress of the fundamental-drive idea would involve a scrutiny of the writings of many representative psychologists, we can provide a sketch of such development in relatively few words.

While the instinct doctrine was under process of being overthrown, a number of workers, realizing that the behavior phenomena, formerly subsumed under its banner would ultimately have to be accounted for in some manner satisfactory to objective thinkers, proceeded to formulate substitute theories of motivation. In 1918, Kempf[71] offered a theory of personality dynamics based upon an analysis of the functions of the autonomic nervous system. According to him human behavior is *actuated* by the autonomic system and subsequently *executed* by the cerebrospinal. This means, of course, that tensions set up in the course of autonomic physiological processes such as digestion, elimination, and sex strain (glandular activity), throw the organism into action causing the central nervous system to enlist its activities in the direction of initiating behavior along lines physiologically satisfactory to it (the autonomic).

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[70] H. A. Carr, *op. cit.*, p. 73.

[71] E. J. Kempf, The Autonomic Functions and the Personality, *Nervous and Mental Disease Monograph*, no. 28, 1918.

Being strictly a pleasure-pain program, this theory is admittedly hedonistic but it does provide a tangible physical basis for the fundamental tension-drive idea. It is illustrated by the well-known peristaltic contractions of the stomach which are associated with the hunger stress and which are only relieved when adaptive actions leading to the acquisition of appropriate food stimuli are inaugurated.

During the same year, Woodworth[72] published a series of lectures on dynamic psychology in which he advanced the thesis that internal stresses within the organic systems of the body cause a disturbance of equilibrium which tends to initiate a "consummatory reaction." This suggestion is not unlike Kempf's and a similar "autonomic" explanation advanced the same year by Perry.[73]

Soon after this, Tolman[74] became very much interested in the problem of motivation, so much so that it will be profitable for us to trace the development of his proposals. Like Kempf, Tolman believed that disturbances of autonomic equilibrium led to overt activities designed to initiate behavior leading in turn to a realignment or reduction of the stresses in question. The function of adaptive behavior was to provide stimuli germane to the neutralizing of the fundamental autonomic maladjustments. Thus an organism suffering from the pangs of thirst would enter upon searching movements designed to deliver to the deprived tissues the moisture necessary to their realignment.

Tolman[75] subsequently crystallized his theory of adjustment into the now familiar concept of "fundamental drives." The latter he divided into *appetites* and *aversions*. The appetites were drives in the sense that they were names for internal physiological disturbances which stimulated the organism to restlessness and "exploratory movements" calculated to bring about the reestablishment of harmony. The aversions, as the name indicates, have reference to avoiding behavior or the tendency to retreat from situations causing pain, injury, confinement, or fright, for example. Incidentally, Tolman has advocated that drives growing out of direct physical needs and autonomic processes be called "first-order" drives and that learned drives which have proven useful in satisfying the demands of basic physiological drives be called "second-order" drives. As an example of the latter, he gives "gregariousness" which obviously provides richer and more economical opportunities for the satisfaction of organic needs through the advantages of group living. More recently, Tolman[76] has presented his proposed classification of the basic drives as found in man:

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[72] R. S. Woodworth, *Dynamic Psychology*, Columbia University Press, 1918.

[73] R. B. Perry, Docility and Purposiveness, *Psychological Review*, 25: 1–20, 1918.

[74] E. C. Tolman, Can Instincts Be Given Up in Psychology? *Journal of Abnormal and Social Psychology*, 17: 139–152, 1922–1923.

[75] E. C. Tolman, The Nature of the Fundamental Drives, *Journal of Abnormal and Social Psychology*, 20: 349–358, 1926.

First-order drives (appetites)	Aversions	Second-order drives
Food-hunger	Fright (injury-avoidance)	Curiosity
Sex-hunger	Pugnacity (interference-avoidance)	Gregariousness
Excretion-hunger		Self-assertion
Specific-contact-hunger		Self-abasement
Rest-hunger		Imitativeness
Sensory-motor-hungers (the esthetic and play)		

Objective Definitions of Drive.—In the meantime, many other competent workers have been formulating similar lists based upon the concept of irreducible organic and derived (learned) needs. Some have attempted to find or assume physiological bases for all their drives, while others have frankly acknowledged that some are learned under the stress of satisfying the physical appetites. Dashiell[77] has popularized the objective concept of "tissue needs" as drives. He lists hunger, sex urge, unfavorable temperature, and various lesser sources of drive. Hollingworth[78] emphasizes action as being the result of "distresses." These are said to include organic distresses, distresses resulting from insults to the self, distresses with a social basis, and distresses due to thought and sympathy. This writer gives a long list of primary distresses which is quite reminiscent of instinct days.

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[76] E. C. Tolman, *Purposive Behavior in Animals and Men*, D. Appleton-Century Company, Inc., 1932, Chaps. 18, 19.

[77] J. F. Dashiell, *op. cit.*, pp. 234–248.

[78] H. L. Hollingworth, *Educational Psychology*, D. Appleton-Century Company, Inc., 1933, pp. 89–102.

Thorndike (and Gates),[79] who pioneered instinct psychology as descriptive of original nature has finally capitulated and now speaks of the "major human *wants*" which he lists as native and acquired, *i.e.*, organic and social. Knight Dunlap,[80] who, it will be remembered, was one of the first to attack a mounting list of alleged instincts, explains motivation in terms of "human desires." Without attempting a meticulous distinction between organic and derived drives he lists (1) alimentary desire, (2) excretory desire, (3) protective desire, (4) activity desire, (5) desire for rest and relaxation, (6) amorous or erotic desire, (7) parental desire, (8) desire for preeminence, and (9) desire for conformity. These are said to find satisfaction in marriage, family, religion, and government.

As early as 1923, Thomas,[81] a sociologist, reasoned that human action was impelled by a great variety of concrete "wishes" most of which could be classified as (1) the desire for new experience, (2) the desire for security, (3) the desire for response, and (4) the desire for recognition. Wishing to be objective, Thomas endeavored to show that these wishes correspond with the functioning of the nervous mechanism. While this assumption has not met with a very enthusiastic reception, his list has enjoyed rather wide publicity. In his textbook in educational psychology, Trow[82] concludes that the foundations of motivation are resident in human "needs" which he classified as psychological, physiological, and social. We mention this because we shall have occasion to amplify his idea of psychological drives later in the chapter.

In an effort to summarize and utilize the most logical proposals of previous students of human dynamics, Symonds[83] has recently offered a new formulation which he hopes will be of benefit to those progressive educators who wish to understand the "springs of human behavior." Symonds gives Tolman's list of appetites as his organic drives and adds his own more detailed list of derived or learned drives, the latter apparently being influenced somewhat by Watson and Spence's[84] well-conceived list of drives which partake of the character of both appetites and aversions. Before presenting the two classifications, Symonds states his conception of the fundamental characteristics of all adjustive behavior. The three-level formulation follows:

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[79] E. L. THORNDIKE and A. I. GATES, *Elementary Principles of Education*, The Macmillan Company, 1929, pp. 65–76.

[80] K. DUNLAP, *Civilized Life; The Principles and Applications of Social Psychology*, Williams and Wilkins, 1934, pp. 61–106.

[81] W. I. THOMAS, *The Unadjusted Girl*, Little, Brown & Company, 1923, Chap. 1.

[82] W. C. TROW, *Educational Psychology*, Houghton Mifflin Company, 1931, pp. 31–40.

[83] P. M. SYMONDS, Human Drives, *Journal of Educational Psychology*, 25: 681–694, 1934. Compare with the clinical findings of Fisher (V. E. Fisher,

I. Fundamental characteristics of adjustment
  a. Drive toward success
  b. Drive toward the familiar
  c. Drive toward new experiences
II. Appetites and aversions (Tolman's list)
  Food hunger
  Sex hunger
  Excretion hunger
  Specific contact hunger
  Rest hunger
  Sensory-motor hunger
  Fright (injury avoidance)
  Pugnacity (interference avoidance)
III. Derived drives
  a. Desire to be with other persons
  b. Desire for attention from other persons
  c. Desire for praise and approval
  d. Desire to be a cause
  e. Desire for mastery
  f. Desire to maintain the self
  g. Desire for security, protection
  h. Desire for affection, tenderness, intimacy, sense of belonging
  i. Curiosity (reaching, grasping, manipulation, explanation)

These tendencies are said to be present in each individual, each learning to satisfy them in ways made possible by his field of experience.

Classifications of Drives.—In classifying drives for purposes of convenience in discussing the behavior mechanisms involved, we could divide them into so-called "organic" or physiological vs.

Auto-correctiveism; the Psychology of Nervousness, The Caxton Printers, 1937, Chaps. 1–4).

[84] G. B. Watson and R. B. Spence, *Educational Problems for Psychological Study,* The Macmillan Company, 1930, pp. 325–331.

social or derived types or, following Trow, we can add a third grouping called the psychological (tendency to activity) drive. We must also recognize the fact that the cultural background of an individual as determined by the insistent mores of his group act as a powerful incentive to approved types of social behavior. And our account of the driving forces of personality would hardly be adequate if we left out of our reckoning the current psychoanalytic views of drive, untenable as some might consider them to be. Thus, while recognizing the interrelated and inseparable nature of all these categories of drive, as we have come to call them, we shall treat them in their various aspects as a matter of convenience.

Physiological Needs as Drives.—Nowhere is the powerful tendency to seek for release from unpleasant strain more evident than in the realm of intraorganic processes. Here we can observe the mechanical operations of physiological structures when subjected to conditions of deprivation. Theoretically, Kempf[85] describes the sequence of events accruing under such conditions as follows: a state of strain or unpleasantness is set up in a segment of smooth muscle when it is thrown into a state of marked or spasmodic contraction. Pleasantness (equilibrium of tonicity) can only be secured by reducing the spastic muscular state to one of normal tension. Under conditions of tissue stress nerve impulses relay the unpleasant situation to the cerebrospinal (central nervous system) neurons, and they in turn actuate the organism to exploratory movements designed to secure stimuli appropriate to the reduction of the state of stress. Richter[86] has suggested that nutritive deficiencies may cause a chemical disequilibrium of the body and that it is the chemical product of this deficiency that excites the central nervous system to inaugurate overt muscular activity.

In plain words, the individual seeks for food, drink, warmth, or rest, as the case may be, and the manner in which he proceeds depends on the circumstances of the situation. This is tantamount to saying that he finds satisfaction for his organic needs in ways *learned* from experience. This conception of adaptive behavior has a great advantage over the older instinct theory in that it holds these responses as being learned rather than as being full-fledged unlearned adaptations.

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[85] F. J. Kempf, *op. cit.*

[86] C. P. Richter, A Behavioristic Study of the Activity of the Rat, *Comparative Psychology Monographs*, no. 2, 1922.

Experimental evidence for the driving nature of internal distresses is not lacking. Following the investigations of Cannon[87] and Carlson,[88] both of whom demonstrated by use of the "empty balloon swallowing" technique that hunger is definitely associated with contractions of the smooth musculature of the stomach walls, Wada[89] made a study of the relation between the hunger drive and general bodily activity. By arranging a rubber diaphragm connected with a receiving tambour under the bed of a hungry sleeper, who was also equipped with an inflated rubber balloon in his stomach, he was able to observe, from the two lines traced upon the attached kymograph record, that, during sleep (also during the quiet waking state), there was a very close relationship between the perastoltic movements of hunger and the rhythmic activity of gross striped muscles. Naturally, Wada concluded that the stresses associated with the sensation of hunger determine vitally the overt actions of the organism.

By means of an ingenious apparatus designed to force rats to cross an electrically charged metal plate in order to satisfy their hunger, sex, and maternal drives, Moss[90] was able to measure the relative strength of these urges in such animals. Contrary to common belief, hunger was found to be stronger than sex as a motivator to action. The maternal drive was in this case weaker than either of the other two. In a maze-running study, in which the factor of incentive was controlled, Simmons[91] secured results similar to those disclosed by Moss. In both of these investigations, it was very evident that physiological cravings resulted in the initiation of active exploratory behavior.

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[87] W. B. Cannon, *Bodily Changes in Pain, Hunger, Fear and Rage*, D. Appleton-Century Company, Inc., 1929, pp. 289–296.

[88] A. J. Carlson, *The Control of Hunger in Health and Disease*, University of Chicago Press, 1916, pp. 33–40.

[89] T. Wada, An Experimental Study of Hunger in Its Relation to Activity, *Archives of Psychology*, no. 57, 1922, pp. 1–65.

[90] F. A. Moss, A Study of Animal Drives, *Journal of Experimental Psychology*, 7: 165–185, 1924.

[91] R. Simmons, The Relative Effectiveness of Certain Incentives in Animal Learning, *Comparative Psychology Monographs*, 1924, vol. 2, no. 7.

The principal physiological drives which are obviously productive of action and which explain much of man's ceaseless activity have been summarized by Gates[92] as follows:

1. Hunger: the craving for food when hungry.
2. Thirst: the craving for drink when thirsty.
3. The craving for air when breathing is difficult or air inadequate.
4. The craving for rest when fatigued or sick.
5. The craving for sleep when drowsy.
6. The craving for warmth when cold.
7. The craving for coolness when overheated.
8. The craving for action when well and rested.
9. The cravings of sex when sexually aroused.
10. The urge to escape when frightened or injured.
11. The urge to get rid of painful and disagreeable substances or conditions.

It requires no stretch of the imagination to realize that these organic needs have played a prominent role in man's conquest of his world and in his attempts to subject the elements to control. They have driven him on to till the soil, dig wells, construct machines, organize business corporations, invent comfortable beds, manufacture furnaces and air-conditioning plants, to build homes, to mate, and to rear families, and to conduct numerous other enterprises. We see then that much of the activity associated with business, industry, transportation, communication, hotels, restaurants, hospitals, and homekeeping is accounted for by the presence of physical stresses and strains in human personality. As for sex, Dashiell[93] has described its influence graphically in these words: "It may be said that whereas need of food, when extreme, may become most imperious, the urge to mating has played the most dramatic part in human history and is notorious for its power often to drive men through all barriers of individual inhibitions and of social taboos." He goes on to say that because of the "impelling character of this bodily urge," the many restrictions of a cultured society are bound to cause complaints productive of maladjusments of individuals with their social environments. And all this can be traced back to the internal secretions of the testes with their accompanying widespread visceral disturbances.

[92] A. I. Gates, *Psychology for Students of Education*, The Macmillan Company, 1930, p. 187. Quoted by permission of the publisher.

[93] J. F. Dashiell, *op. cit.*, p. 236.

Social Needs as Drives.—Under this caption, we have reference to those marked tendencies in normal individuals to seek for the approval of others—the search for those satisfactions that the existence of other individuals makes possible. These are essentially the "derived" drives mentioned by Symonds (page 209) and may be thought of as being learned in connection with the process of finding avenues leading to the satisfaction of organic needs. Thus we say that people are almost universally driven to striving along various lines in an effort to gain favorable recognition, social approval and prestige, success, praise and admiration, friends and loved ones—in short, *social security.*

As the author[94] has suggested elsewhere, these desires are so strong in children and youth that excessive frustration of their realization frequently leads to serious emotional maladjustment. Just as the physical structures disintegrate when deprived of nutritive needs and other imperious organic necessities, so the emotional balance of personality is disturbed when the fundamental social satisfactions necessary to such balance are not forthcoming. For instance, all abhor being shunned or ignored, and continued experience of this kind is generally regarded as leading to unhappiness if not to positive pathological behavior. We have all heard the saying that the most vicious creature in captivity is "a woman scorned."[95]

Some writers, Perrin,[96] for example, believe that all social motives are a reflection of the deeper craving for *prestige.* Human beings crave notice; they desire above all things to be regarded as distinctive in some respect; they want to escape from the level of the commonplace. It is generally believed that this drive accounts for efforts to be distinctive in dress, to secure high educational attainments such as graduate degrees, to become skillful in technical and artistic callings, to climb the social ladder, to get one's name into print, to cultivate the acquaintance of the great and the near great, and last, but not least, to conjure up plausible reasons for magnifying the self (ego). In polite parlance, these tendencies are usually rationalized by being called ambitions, but they nevertheless illustrate the prestige-seeking mechanism.[97]

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[94] L. P. Thorpe, Understanding Child Nature, *Education*, 56: 466–469, 1936.

[95] Evidence touching on the relative influence of praise, reproof, and of being ignored is not lacking. Hurlock tells of a study in which three comparable (equated) groups of children (grades four to six), all of whom were working with the Courtis research tests in arithmetic, were subjected systematically to the three types of motivation in question. As Hurlock's charts show, the praised group made much more progress than did either of the others. Even the reproved children exceeded those who were continually frustrated by being ignored (E. B. Hurlock, An Evaluation of Certain Incentives used in School Work, *Journal of Educational Psychology*, 16: 145–159, 1925; see also E. P. Gilchrist, The Extent to Which Praise and Reproof Affect a Pupil's Work, *School and Society*, 4: 872–874, 1916).

[96] F. A. C. Perrin, *Psychology: Its Methods and Principles*, Henry Holt & Company, 1932, pp. 191–192.

Almost all individuals appear to desire success in some respect. Attainment and skill frequently bring in their wake favorable notice leading to rewards of various kinds. Children soon learn this fact and subsequently are on the lookout for real or simulated success. Unfortunately, the latter may sometimes satisfy them as well as the former, if accompanied by praise and admiration. Continual failure in school may, owing to excessive thwarting of the desire to be regarded as worthy and capable, lead to serious antisocial behavior, the latter being presumably calculated to relieve the stresses set up by repeated disparagement. Teachers who understand the strength of this drive endeavor to see to it that even the most humble pupil attains to obvious success in some respect, be it only skill in playing a harmonica or in policing a road crossing. The thrill of success leads to favorable recognition with its attendant gratifications and to bodily tonus indicative of general well being.

The derived tendency to desire friends and loved ones appears to be well-nigh universal. Even the most hardened characters have their pals and molls. We like to be with other people of our selection and to receive attention from them. We enjoy a certain amount of tenderness and intimacy from loved ones.

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[97] Here also there is some experimental evidence. Ten college freshmen, all keenly desirous of the prestige attendant upon being accepted in a certain social fraternity, were subjected to five days of hard work, loss of sleep, considerable hazing and personal humiliation, after which they were required, as a test of fitness, to compute as rapidly as possible a series of arithmetic problems. Due presumably to the drive for notice and acceptance, they accomplished their task much more satisfactorily than did a control group of fifty juniors, not under stress of any particular motivation (F. B. Knight and H. H. Remmers, Fluctuations in Mental Production When Motivation Is the Main Variable, *Journal of Applied Psychology*, 7: 209–224, 1923).

This disposition may seem somewhat infantile, but it is easy to see how it would develop. Obviously, it leads to a certain degree of protection and security from the vicissitudes of life—the goal of all human striving. Trow[98] believes that we tend to extend tenderness, in the form of service to humanity, as well as seek it. As proof, he cites the growing humanitarian attitude toward unfortunates, such as the sick, the crippled, the feeble-minded, and the insane.

Symonds[99] has suggested how these derived or second-order drives may have been learned in connection with the satisfaction of primary organic cravings. As he puts it, the infant very early associates such elementary satisfactions as feeding, urinating, defecating, and avoiding pain with certain individuals, particularly the mother. So it comes about that attention, praise, approval, and recognition in general are closely associated with deep organic satisfaction and are thus conducive to a state of relaxation and pleasant body tonus. Thus the infant learns to look for affection and security from others and to regard these as permanent life needs.

One would naturally be inclined to wonder whether the social drives are personal stresses, in the sense of being independent of structural functions, or whether they too are reflections of tissue needs. One's position on this issue would no doubt be contingent upon his stand in the matter of mechanistic vs. vitalistic philosophy. Strictly objective psychologists are, of course, disposed to seek for a physiological explanation of all driving motives in man. Perrin's[100] views are probably emblematic of this stand. He reasons that all needs, organic or otherwise, "reported in consciousness" are the result of tensions due to changes in the tonicity of visceral structures. Thus, "Just as food satisfies the visceral tension called 'hunger,' so a passing grade in a course relieves the visceral tension called 'worry.' Both the food and the grade are *tension-relieving* stimuli." This puts all driving motives, physiological or so-called "derived," upon a strictly visceral-stress basis. Deprivations produce strains while satisfaction of needs restores muscular equilibrium and tissue integrity. Thus, according to this view, there is no clear distinction between organic and social dynamics: both are ultimately biological.

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[98] W. C. Trow, *op. cit.*, pp. 37–40.

[99] P. M. Symonds, *op. cit.*, pp. 690–694.

[100] F. A. C. Perrin, *op. cit.*, 197–199.

Psychological Needs as Drives.—The tendencies associated with this title are closely akin to those discussed under *physiological needs* but are perhaps sufficiently different in nature to warrant separate treatment. We have in mind particularly three related desires which characterize practically all normal human beings, *viz.*, (1) the desire for unrestrained bodily activity (play), (2) the desire to engage in purposeful effort, and (3) the desire for a reasonable amount of independence of action.

Play.—In this day and age, we feel that bodily activity in the form of unrestrained play is not only morally permissible, but positively imperative to children's physical, social, and emotional hygiene. The time was when children's inclinations to play were considered to be an expression of their natural tendency toward "total depravity." Consider for instance, this quotation dating from about the beginning of the eighteenth century: "'Play must be forbidden in all of its forms. The children shall be instructed in this matter in such a way as to show them, through the presentation of religious principles, the wastefulness and folly of all play. They shall be led to see that play will distract their hearts and minds from God, the eternal Good, and work nothing but harm to their spiritual lives.'"[101] Is it any wonder that Rousseau rebelled against this and other morbid doctrines of his day?

Subsequent to the days of such extreme Puritan dogma, intelligent students of nature have gradually come to see that children's activity is spontaneous, that it is a natural outlet for energy acquired through metabolic processes. Furthermore, it has been noticed that the very buoyancy and happiness of childhood and youthhood is contingent upon a reasonable amount of freedom to engage in spontaneous activity purely for the activity's sake and without forethought of utility. It is to be expected, however, that various schools of thought would concoct, on the basis of natural economy, alleged reasons for the appearance of this phenomenon in children. These can only be touched upon here.[102] First, there is the Spencer-Schiller "surplus energy" theory,[103] which played so nicely into the hands of those who wished to have young people drain off their excess enthusiasm through serious hard work. Another well-known proposal is the one by Groos[104] which offers play as nature's way of preparing children for the activity of later life. Incidentally, in modern life, play seems poorly designed for such a function. Then there is G. Stanley Hall's[105] famous, but now defunct, theory of play as recapitulation of the hunting proclivities of our alleged primitive ancestors. We could also mention McDougall's[106] assumption of play as the "instinct" of rivalry and Appleton's[107] biological theory of play as a stimulus to growth.

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[101] Quoted in, C. H. Judd's *Genetic Psychology for Teachers*, D. Appleton-Century Company, Inc., 1911, p. 72.

[102] For a more amplified account of the theory and practice of play we

It has long been obvious that there are many inadequacies in each of the above theories, thus newer and more psychologically justifiable interpretations have been offered.[108] Almost all of these are based on the thesis that man is an active dynamic being whose primary life need is bodily activity and whose energy needs self-expression through the avenue of play. Indeed, the position is taken that man, being alive, and being possessed of strong motives and desires, seeks primarily for a realization of these drives through just such active media as play. This point of view is exemplified by Curti's[109] "freedom theory" which emphasizes untrammeled play as a means of securing the satisfaction of dynamic motives. Then there is Dewey's[110]

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would recommend the reading of such volumes as, H. C. Lehman and P. A. Witty, *The Psychology of Play Activities*, A. S. Barnes, 1927, and E. D. Mitchell and B. S. Mason, *The Theory of Play*, A. S. Barnes & Company, 1934.

[103] H. Spencer, *The Principles of Psychology*, D. Appleton-Century Company, Inc., 1873, vol. II, pp. 627–635. See also F. Schiller, *Essays, Aesthetical and Philosophical*, G. Bell & Sons (London), 1875, pp. 112–113.

[104] K. Groos, *The Play of Man*, D. Appleton-Century Company, Inc., 1901.

[105] G. S. Hall, *Youth*, D. Appleton-Century Company, Inc., 1920, Chap. 6.

[106] W. McDougall, *Social Psychology*, John W. Luce & Company, 1918, pp. 111–113.

[107] L. E. Appleton, *A Comparative Study of the Play of Adult Savages and Civilized Children*, University of Chicago Press, 1910.

[108] For a summary of these, see, E. D. Mitchell and B. S. Mason, *The Theory of Play*, A. S. Barnes & Company, 1934, Chap. 3.

[109] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1931, Chap. 11.

[110] J. Dewey, *Human Nature and Conduct*, Henry Holt & Company 1922, pp. 90–93.

doctrine of play as an organic part of the life process of becoming socialized. Among others, Robinson[111] has called play a means of securing compensation for the feeling of lack of power which the typical child possesses.

From this brief résumé of the socialization of play, it is evident that it has come to be regarded rightfully as an outlet for one of the organism's strongest physical urges—the drive for bodily activity. Play is a dynamic need which, when intelligently directed, may lead to a variety of advantages for symmetrical personality development. Play is obviously advantageous for the generation of vigorous good health and furnishes a joyful avenue for the fulfillment of such a need. It also gives children the principles of fair play, since give and take, cooperation, and self-restraint are actively involved. By the same token, insofar as moral sanctions are brought into the picture in games involving honesty and other forms of personal integrity, the child's moral growth may be aided and abetted.

Purposeful Effort.—We have been hearing a great deal in recent years, especially in connection with the project-method philosophy, about the purposeful activities of children. Even a cursory observation of the children's spontaneous actions is said to indicate that they do possess a decided tendency to strive toward definite ends of their own choosing. It should not be concluded however, that children's goals are necessarily utilitarian in nature. On the contrary they represent the unrestrained caprice of the child's natural bent toward social play. Thus theorists have been able to link children's active responses with more or less physically, socially, and morally constructive enterprises. They reason that since the unsophisticated child's drive to active, purposeful effort can be capitalized to promote the acquisition of educational experiences, education might well be on the play level during the early years. Bobbitt,[112] who believes that play is nature's way of fixing the early physical and social habits of man, advocates the spontaneous-play way as a good start for children but urges a later transition to conscious work which, instead of being an unplanned end in itself, is admittedly a "conscious shaping and control of the objective world" (page 6).

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[111] E. S. Robinson, The Compensatory Function of Make-Believe Play, *Psychological Review*, 27: 429–439, 1920.

[112] F. Bobbitt, *The Curriculum*, Houghton Mifflin Company, 1918, pp. 3–25.

Burnham[113] has long since advocated the recognition of children's desire for reasonable freedom to work out purposeful activities as a matter of intelligent mental hygiene. In short, the early craving for permission to work out one's own plans and purposes, infantile and fleeting as these may be, must be accorded a balanced realization if wholesome personality development is to accrue. Incidentally, we should like to say that in espousing the cause of a *balanced* satisfaction of the purposeful-effort drive we are not subscribing to any theory of nonrestraint in child care. Rather than espouse a doctrine of "all engine and no steering wheel," we would prefer to take our stand with Bagley,[114] who openly condemns the child-purpose way as an exclusive philosophy of education and character development.

Independence of Action.—As for the desire for independence of action, which is obviously closely related to the purposeful activity drive, its existence can easily be ascertained by thwarting summarily the spontaneous play of little children, the ball games, gang activities, or social affairs of adolescents, and the political or religious freedom of adults. In any case, the urge for freedom of action will be very much in evidence. Although the life-orientation process is, after all, a program of developing and maintaining a nice balance of personal independence within a larger area of social dependence, the drive for freedom is so strong that nearly all of us endeavor to appropriate as much personal freedom as our social order will permit—and sometimes more. In testimony of this tendency, we can cite the galaxy of revolutions chronicled in history, as well as the network of advantage-seeking currents operating in our present world of social, political, economic, and religious institutions.

This strong desire for independence is usually regarded as one of the major causes of youth-parent friction during the "conventionalizing" days of adolescence. At its highest point of stress, this drive is symbolized in the famous expression, "Give me liberty or give me death." Thus, what we have called the psychological drives are also tension producing processes which depend for their subsequent realignment of stresses upon the realization of certain stimulating satisfactions. It is undeniable that the cravings for action (play) and for freedom to carry out one's life plans explain much of man's ceaseless activity. These may properly be designated as dynamics of personality.

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[113] W. H. Burnham, *The Normal Mind*, D. Appleton-Century Company, Inc., 1924, Chap. 10.

[114] W. C. Bagley, Is Subject-Matter Obsolete? *Educational Administration and Supervision*, 21: 401–412, 1935.

Psychoanalytic Views of Drive.[115]—Without going into detail and as a supplement to the more conventional interpretations of drive just enumerated, we should like to mention a few of the implications for personality dynamics of the increasingly popular psychoanalytic doctrines.

Freud.—According to Freud, the real driving force in life is the desire for sexual (in the broad "pleasure" sense of that term) gratification. During the child's infant days, this craving finds adequate fruition in such elementary life processes as sucking (at the breast), sleeping, and elimination; he also finds erotic satisfaction in thumb sucking, in the caresses of his mother, and through manipulation of the genitals. All this gives free scope to his "libido" or life drive for carnal (sexual) satisfaction. As the child grows older, he soon learns that there are social conventions which place taboos on the free expression of these gratifications. Thus he develops an "ego" or self-consciousness which tries to keep its face in relation to others, while at the same time endeavoring to continue enjoyment of the erotic pleasures.[116]

Naturally, this dual effort sets up a conflict in the life of the individual which at first tends to make for resistance of conventions, but which is said ultimately to lead to attempted repressions of the erotic cravings. And so it comes about that the victim is torn between conflicting desires for social approval (ego satisfaction) and for sexual gratification (as general erotic pleasure and fixations on loved ones). Those who are in sufficient control of their repressed desires (the unconscious or "id") get along well, except for occasional dreams and slips of the tongue, but the unfortunates who find the gap between the ideals of righteous living and the cravings of the sordid pleasure impulses too great to be reconciled become the victims of nervousness, fantastic dreams, various forms of illness, pessimism, and other symptoms of "neurosis."

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[115] For complete accounts of psychoanalytic doctrines it is necessary to consult the writings of Freud, Adler, and Jung. However, many excellent summarized statements are available. One of the best of these is found in R. S. Woodworth, *Contemporary Schools of Psychology*, Ronald Press Company, 1931, Chap. 5. A shorter account is included in G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, pp. 418–432.

[116] S. Freud, *Beyond the Pleasure Principle*, International Psycho-analytic Press, 1922, pp. 64–67.

As an escape from the constant conflict between the ego and the suppressed organic desires the individual is said to develop unconsciously a variety of attempted adjustment mechanisms designed to drain off the tension. These include *repression* (the forcing into the unconscious of distressing thoughts and feelings), *symbolization* (dream symbols standing for tabooed cravings), *rationalization* (giving "plausible" excuses for irregularities in conduct), *sublimation* (the substitution of socially acceptable pleasures for infantile sexual impulses), *projection* (self-justification through blaming others or obstacles thus satisfying the ego), and *conversion* (the release of emotional tensions due to repressed impulses through the irridation of genital desires throughout parts of the body; exemplified by hysteria).

How successful the ego and the superego (the conscience) will ultimately be in controlling the restless propensities of the unconscious means everything to the emerging personality.[117] According to Freud, much depends upon the extent of sexual satisfaction enjoyed in infancy; the child who drew a "bounteous" mother would, as a result of gratification in feeding, tend to become optimistic and well poised; the one who was disappointed in nursing would be inclined to become nervous and pessimistic. This is the Freudian viewpoint on personality drives.

Adler.—Adler's "individual psychology" suggests to some extent the same idea of a dual conflict between two poles, namely, the endorsements of society and the suppressed cravings (drives of the unconscious). In this case, the libido or life drive is for *power*, mastery over others.[118] Naturally frustrations are inevitable in such a quest, and so marked feelings of inferiority are said to spring up. These lead to efforts at compensation which may take legitimate or antisocial directions. As examples of the former, Milton, though blind, Demosthenes, though a stutterer, and Beethoven, though deaf, strove successfully to excel in their respective areas of inferiority. Braggards, bullies, and gangsters may be cited as examples of individuals who have compensated for their feelings of inferiority in unfortunate ways. But the point is that all are striving for power and that their behavior must be interpreted in the light of how successful they have been in attaining to the same. Adler believes that the "style of life" is set in the early years and thus he emphasizes the importance of assisting the child in meeting problems courageously and with self-assurance.

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[117] S. Freud, *The Ego and the Id*, Hogarth Press, 1927, p. 83.

[118] A. Adler, *Problems of Neurosis*, Cosmopolitan Book Corp., 1930, pp. 41–47.

Jung.—Jung's[119] doctrine is not unlike Adler's, except that to him the motivating force in life is the desire to make progress—the urge to get on in life. This urge is broader than sex, including religious and artistic interests. Failure to get on in the struggle for existence may lead to "infantile regression" or a tendency to give up the struggle in favor of the protections of childhood. Jung also emphasized the dual tendency of man to strive toward the good as well as the antimoral.

From this brief résumé, it is evident that psychoanalysts have their own notions of personality dynamics. They think in terms of driving appetites which soon get their possessors into trouble, owing to conflicting ideals of society, but which persist in their efforts to find gratification sufficiently to influence behavior in many detailed ways. This is practically a return to instinct psychology, but, owing to the glamorous nature of psychoanalytic theories, it has enjoyed wide popularity. Regardless of the position one takes in this matter it must be admitted that the phraseology and therapeutic techniques of psychoanalysis have profoundly influenced modern thinking. In modified form, they are current coin in most textbooks both on normal and abnormal psychology, and they constitute practically the cornerstone of functional psychiatry.

IV. SUMMARY AND FURTHER IMPLICATIONS FOR PERSONALITY

Conflicting Views of Personality Dynamics.—We come now to a concluding statement of the consequences of the existence of fundamental needs in man. But first we shall endeavor to summarize the conflicting views touching on contrasted conceptions of the foundations of personality dynamics. While no competent student would claim for a moment that our knowledge along this line is anywhere near complete, a number of groups seem to feel that they do not fall far short of holding the key to an explanation of behavior motivation. Thus one rather heterogeneous school of thought holds that we behave as we do because of the presence of irreducible inner mechanisms. They are inclined to attribute attitudes, abilities, character, and conduct, and even personality qualities, to the workings of these innate forces variously called instincts, urges, complexes, will power, and, more recently, motives, drives, tissue needs, visceral tensions, and the like. This group includes the resourceful psychoanalysts with all their impressive sounding explanations (mechanisms), as well as an appreciable percentage of psychiatrists and psychologists, objective and otherwise. It numbers among its followers chemically "minded" endocrinologists and biologically trained maturationists. All look for the foundations of personality *within* the human organism.

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[119] C. G. Jung, *Contributions to Analytical Psychology* (trans. by H. G. Baynes), Harcourt, Brace & Company, 1928.

A second group feels that an individual's habits, conduct, dispositions, views on life, and character qualities are often all the inevitable results of responses to environmental patterns. This is the view of many sociologists and certainly of environmentalistic psychologists, such as the behaviorists, for example. These groups recognize the presence of fundamental organic mechanisms, but hold that the social environment is the superior influence in shaping character and personality. They make much of studies focusing on the influences of the home, the school, the church, the gang, the movies, and community factors in general.

A slight variation on this group is the one which looks for an explanation of human behavior with all its indoctrinated beliefs, manners, customs, codes, and rituals, to the cultural mores of different societies. Students of society contend that, owing to the rigidity and authoritative nature of most systems of group mores, individual personalities are essentially products of their requirements.[120] Furthermore, it has been shown that a typical child's general character pattern adapts itself to the requirements of each social group of which he becomes a member even temporarily.[121] From this the inference is drawn that group mores are stronger behavior determiners than are any known inner drives.

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[120] L. P. Thorpe, The Influence of Mores in Education, *Educational Administration and Supervision*, 22: 289–298, 1936.

May,[122] who has discussed these conflicting views most adequately, suggests that, since none of them can possibly be regarded as possessing final knowledge concerning the psychological foundations of personality, we might well pool the contributions of each in an effort to construct a more adequate picture of the dynamics problem. Believing as he does that "The problem of human behavior is not only one of mutual adjustments between the organism and its social environment, *but also between the inner mechanisms of the organism and social traditions*," May advocates a broad conception of personality foundations which includes both the contributions of biological scientists with their inner-mechanism explanations of such organic processes as eating, sleeping, mating, fighting, and the like, and the findings of environmentalists interested in disclosing the modifying effects of social endorsements and cultural traditions. We should like to join with May in this comprehensive approach.

Practical Applications of the Fundamental Need Concept.—Coming back to the question of what must be done about the existence of such fundamental life needs as we are reasonably sure present knowledge has disclosed, we are confronted with a simple problem (in theory) in logic. If irreducible physiological, social, and psychological (as previously defined) needs actually obtain, and if the so-called "physical," "social," and "emotional" aspects of the personality tend to disintegrate when excessively frustrated or unduly indulged, it follows that the science or art of personality building is one of providing a *balanced* realization of the fundamental drives in question. This is tantamount to saying that if we would improve the art of child rearing we must harmonize with the known laws of human nature and proceed to discover others which will throw more light on the foundations of personality. This program represents the quest for human happiness—the so-called "abundant life"—and such happiness must be acquired by way of temperate satisfaction of life's needs—physical, social, and what is commonly called "spiritual."

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[121] H. HARTSHORNE, *Character in Human Relations*, Charles Scribner's Sons, 1932, pp. 213–214.

[122] M. A. MAY, The Foundations of Personality, in *Psychology at Work*, P. S. Achilles (Ed.), Whittlesey House, McGraw-Hill Book Company, Inc., 1932, pp. 92–101. (Author's italics.)

The following quotation from Trow[123] sets forth, better than we have been able to state, the program of personality adjustment through legitimate realization of distress-producing needs: "If enough good food, rest, sunshine, and so forth, are obtainable, so that the physiological organism is strong and healthy, if there is sufficient opportunity for free activity, for striving for ends which he considers desirable, and for the appreciation of things which are to him beautiful; and if, in the eyes of his comrades, there is something of respect for him; and if there are those in whom he can confide and those whom he can in some way serve, man may experience that feeling of happiness which has been the goal of life for untold generations."

One point remains to be mentioned. If it is true that a child longs for affection, understanding, successful achievement, friends and companions, and active outlets for his energy, it follows that serious misbehavior on his part is likely to be symptomatic of hidden maladjustments due to unreasonable thwarting of legitimate satisfactions to which he is entitled.[124] Thus the objective of discipline would logically be to ferret out, if possible, the causes of the unseeming behavior with a view to helping the child make better adjustments, find more acceptable outlets for his interests, and to secure his share of life's imperious wants. Punishment, instead of being a stock retribution for a classified misdemeanor, would be a means to an end (the child's development) and would have to stand the acid test of probable effect upon the attitude of the recalcitrant. This point is mentioned here because it is clearer when presented in the light of the child's natural reaction to an unbalanced realization of life's basic needs.

Questions for Stimulating Thought and Discussion

1. Why do you suppose such capable pioneers as William James and Edward L. Thorndike considered the instinct idea so superior to pre-

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[123] W. C. Trow, *op. cit.*, p. 41.

[124] C. Bassett, *The School and Mental Health*, The Commonwealth Fund, 1931, pp. 8–13.

vious doctrines of personality dynamics? Were they justified in adopting such a position? Why?

2. Why did the instinct hypothesis cause such confusion in psychological circles? Have instincts given us a tangible explanation of the foundations of human motivation? Justify your answer as you would to a trained psychologist.
3. Could you dispense with so-called "instincts" and explain the various ramifications of behavior in terms of the responses of physical structures as conditioned by (1) their mechanical design, (2) their degree of maturation, and (3) modifications brought about by learning? Try it.
4. Debate the antithetical positions (1) that the dynamic traits of personality are provided by a collection of innate unlearned tendencies and (2) that such traits are acquired by way of social intercourse and intelligent adjustment making. Support your arguments with tangible data and logical considerations.
5. Refute the accusation that the maturation concept is merely a disguised substitute for the old instincts. In what way is the maturation idea a superior explanation of the development of adjustive behavior?
6. What is the principal weakness of the theory of behavior as a function of "self-generating" physical structures? Can such an alleged principle account for the dynamic nature of the human personality? If so, how? If not, why not?
7. On what grounds did such investigators as the Ohio group, the Shermans, and others take issue with Gesell, Coghill, and other maturationists, who contend that behavior is for the most part a mechanical counterpart or function of neural structures as conditioned by their degree of maturation? Substantiate your opinion of their interpretations.
8. What justification, if any, do we have for postulating organic and social needs as drives to action? Should we not seek for a deeper source of motivation as being implicit in life purposes and plans? What are the objections to the latter position?
9. Assuming the validity of the thesis that insufficient satisfaction of legitimate physical needs eventuates in a state of organic imbalance (stresses and strains), can we reason that an excessive frustration of *social needs* will result in a similar situation? What are the implications here for personality integrity?
10. What are the objections to calling the desires for independence of action and freedom to carry out purposeful activity basic drives of the personality? Are they sufficiently universal and fundamental to merit such a position in the dynamics field? Justify your answer.
11. Why do we not accept the ingenious proposals of the psychoanalysts in the matter of motivation of behavior? In what way are they unscientific? Why have we borrowed so many of their concepts in mental-hygiene practice?
12. What difference does it make whether we think of personality dynamics as being irreducible inner mechanisms which drive us to behavior or as learned dispositions to act which have resulted from environmental influences? Explain the implications of each position for education and endeavor to show the plausibility of a compromise position.

Recommended Readings

Bassett, C.: *The School and Mental Health*, New York: The Commonwealth Fund, 1931.

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Fisher, V. E.: *Auto-Correctivism: The Psychology of Nervousness*, Caldwell (Idaho): The Caxton Printers, 1937, Chaps. 1–4.

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CHAPTER VI

EMOTIONAL CONDITIONING AND PERSONALITY

I. THE NATURE OF EMOTIONAL BEHAVIOR

Views on the Role of Emotions.—It is very evident from our examination of technical, as well as popular literature and from the conversations of people in general that the phenomenon popularly called "emotional" experience is considered to be an extremely prominent component of the total experiential pattern in man. In fact, it is commonly believed that emotions, though only vaguely understood and defined, lie at the very heartbeat of life, that they are in truth the *springs to action*. As a scrutiny of our scientific literature will also indicate, even academic writers, although disagreeing as to the real nature and etiology of emotional behavior, are of one accord in giving a prominent place to the subject in their systematic treatises. Thus, any mature consideration of the problems of personality must of necessity take into account the processes involved in so-called "emotional development."

As we shall soon see, there is by no means unanimity as to the meaning of the term emotion or with reference to its role in the dynamic aspects of behavior. The word is hopelessly confused with feelings, impulses, prejudices, instincts, driving needs, and even with intellect. The concept of emotion is almost as ambiguous as those of "instinct" and "mind." As we shall bring out more in detail later, these considerations have led some psychologists to question the value of considering emotive action as constituting a separate category of human behavior. For critical purposes they would prefer to regard such responses as comparable to nonemotive reactions, differing from them in degree rather than in kind.

Nevertheless, the emotion idea is so deeply ingrained in the thinking of educated as well as untutored individuals that it will probably be some time before we can discontinue an appraisal of the concept as now held. That it will eventually go the way of instincts, disembodied mind, and traits as unified entities, is the belief of the author. In the meantime, it is probably best not to attempt to compress the elaborate organismic processes commonly associated with emotive behavior into a stereotyped definition of emotion as such. We should prefer, rather, to think in terms of a concrete description of the forms of behavior observed in any given instance, remembering that, as commonly understood, emotional life is at birth decidedly undifferentiated, becoming gradually more specific as the maturing effects of growth and social experience leave their differentiating effects. Thus we may again avoid the naïve fallacy of attempting to set an inquirer at ease by offering him a standardized formula in place of the detailed behavior description really called for.

Emotions as Dynamic Entities.—From the outset we must guard against the tendency to regard emotions as distinct innate entities responsible for the appearance of well-coordinated, differentiated configurations of response such, for example, as fear, love, rage, or joy. As Morgan[1] rightfully reminds us, such words are actually designations of forms of behavior, they are descriptive of acts that individuals perform. "If one asks why a man is walking, the reply, 'walking makes him do it,' is no explanation. Similarly, if one is asked why a man is throwing his arms about, clenching his fists, and using abusive language, the reply, 'rage makes him do it,' is no explanation. 'Walking' describes the motor action of locomotion, 'rage' describes certain forms of behavior; but neither word is anything more than a descriptive term."

We must recognize then that emotions are not names for causal agents; instead, they are names for describable patterns of action *elicited by environmental or intraorganic stimuli*, but which may in turn become the cause of further rather persistent responses. Perhaps this last point is responsible for the erroneous tendency to regard emotions as driving forces—as the dynamics of personality. We might go a step further and suggest that, while it is certainly valid in the light of present knowledge to associate emotions with widespread visceral disturbances set up by powerful innervations relayed through the autonomic nervous system, we are not warranted in thinking of such emotion-differentiating labels as fear, anxiety, or anger as names for these organic processes. It would seem more consistent to use these names as designaters of the specific reactions generated by *certain kinds of stimulating situations.* As an example, fear would be a reaction characterized by intense internal stresses (emotion) and caused by a stimulating situation in which the subject recognized elements known (learned) to be inimical to personal safety. In this sense an emotional experience is an *effect* and not primarily a *cause.* Morgan[2] concurs with this view when he insists that such emotion-descriptive words as rage, fear, and love "should not be given any dynamic value."

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[1] J. J. B. MORGAN, *Child Psychology*, Farrar & Rinehart, Inc., 1934, pp. 144–145. Copyright, 1934. Reprinted by permission of the publisher.

Emotions as Synonymous with Driving Needs.—This line of reasoning seems to some of us consistent and logical, but to others, who may or may not have thought the matter through, it apparently appears otherwise. At least some have come out with dogmatic statements to the effect that emotions are drives to action. Whether they mean *primary* or *derived* drives is not clear to the writer. Perrin[3] declares that all emotions are motives and that "just as hunger impels the organism to obtain and devour food, so fear prompts it to flee from danger, and anger spurs it to belligerent activity." This is true, but, whereas hunger is a name for a state of inner organic imbalance due to the incidence of primary physiological need, fear is an appelation associated with an intense learned reaction occasioned by an antecedent external exciting stimulus, such as the sight of a wild animal, for example, the configurational circumstances of which determine the pattern of the immediate response as well as the subsequent overt adaptive reaction. The visceral stresses for which hunger stands are *initial* drives whereas the emotional experience for which fear stands is an effect which may be said to have eventuated from a meaningful external stimulating situation. Nevertheless, Perrin makes emotions and drives practically synonymous when he says that "emotions are physiological drives upon which many different kinds of stimuli have become conditioned." This position would give the personality an added category of fundamental drives.

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[2] *Ibid.*, p. 144. Copyright, 1934. Reprinted by permission of the publisher.

[3] F. A. C. PERRIN, *Psychology: Its Methods and Principles*, Henry Holt & Company, 1932, pp. 158–159.

Blanchard[4] also makes emotion synonymous with our personality dynamics (Chap. V) when she says that the young man who is actuated by the emotion of love will spend years in an effort to secure a position by means of which he may support a wife. This is evident, but love, except in its occasional cataclysmic manifestations, is generally classified as a cultural aspect of the organic sex drive. As ordinarily considered, love does not qualify under the conventional conceptions of emotion as "a stirred-up state of the organism"[5] or as a temporary complex flood of sensations eminating from the autonomic system and pervading the entire body.[6] Chapman and Counts[7] would seem to be more consistent when, after making it clear that emotions are sensations incidental to bodily changes which follow upon external stimulation, they regard emotional disturbances (as thus defined) as motivaters to further and perhaps important life adjustment processes.

Emotions as Controllers of Intellect.—We hear a great deal about the unfortunate fact that the emotional component of personality tends to control its more rational and potentially directive fellow component—the intellect. There seems to be much truth in this accusation, but we must hasten to remind ourselves that in an organismic unit like the human personality by no hook or crook can we conceive of emotional and intellectual aspects as being mutually exclusive in organization or function. The twin categories are but convenient labels for two not too clearly delineated aspects of a completely amalgamated mesh of response. Yet it is usually considered clarifying to speak of emotional vs. rational considerations as occupying the center of focus or directive influence in specific instances.

The alleged widespread control of intellect by the emotions is considerably weakened by another confusion of concepts. The emotions in question, when analyzed, often turn out to be anything from feeling, prejudice, motive, or appetite to deterministic attitudes. If emotion, as a *temporary and highly stirred-up state of the organism* characterized by chaotic and incoherent[8] responses, is in control, then we can see where emotion influences reason. But true emotional states, as thus defined, are usually too infrequent to enjoy much dictatorship. It is the calmer so-called "attitudes," "prejudices," and "feelings" which writers ordinarily have reference to when they speak of capricious living and none of these are by definition emotions. Briggs[9] has much to say about emotionalized attitudes which incidentally are credited with being substitutes for original thinking and for usurping the direction of behavior. But these attitudes are not by definition true emotions, they are rather strong dispositions to behave in characteristic ways that have been built up as a result of affective experiences. Of course, some dispositions may have been formulated under the stress of powerful emotional upheavals seeking an avenue of energy discharge. Behavior "sets" acquired in this manner tend to generate perverse responses which may logically be attributed indirectly to emotional experience. As for appetite[10] (or rather the stresses giving rise to it), it comes under the concept of fundamental organic needs and should thus not be confused with emotional mechanisms.

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[4] P. Blanchard, *The Child and Society*, Longmans, Green & Company, 1928, pp. 33–35.

[5] R. S. Woodworth, *Psychology*, 3d. Ed. Henry Holt & Company, 1934, p. 338.

[6] A. I. Gates, *Psychology for Students of Education*, The Macmillan Company, 1930, p. 147.

[7] J. C. Chapman and G. S. Counts, *Principles of Education*, Houghton Mifflin Company, 1924, p. 62.

Just a word about feeling. It is usually understood that feeling and emotion are but relative degrees of the same affective experiential field. We think of pleasant feeling as a state of tissue equilibrium characterized by the absence of organic strains. Unpleasant feeling would be the counterpart of such a state of affairs. Emotion is by definition a temporary and quantitative extension of the feeling concept. As Morrison[11] puts it, "Emotion may be said to be excess feeling." Or, with Nimkoff,[12] we can illustrate by an analogy: "Emotion bears the same relation to ordinary feeling that the swell bears to the ordinary ripple of the sea. It is composed of feeling, but of an accumulation of feeling." This writer goes on to say that it is *feeling* that determines the child's course through life. Reasons are afterthoughts calculated to "rationalize" acts originally initiated by the drive for satisfaction (visceral equilibrium).[13]

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[8] P. Sandiford, *Educational Psychology*, Longmans, Green & Company, 1929, p. 129.

[9] T. H. Briggs, *Secondary Education*, The Macmillan Company, 1933, p. 372.

[10] H. C. Morrison, *Basic Principles in Education*, Houghton Mifflin Company, 1934, pp. 174–184.

[11] *Ibid.*, pp. 198–199.

[12] M. F. Nimkoff, *The Child*, J. B. Lippincott Company, 1934, pp. 100–101.

It appears from this discussion, then, that emotions as such are only occasionally and temporarily in the saddle, as it were. Caprice may dictate behavior, but, for the most part, it comes in the guise of less intense but more enduring feelings, prejudices, and inflexible attitudes. This type of analysis may not result in the positing of a more rational determination of conduct, but perhaps it will serve to clarify somewhat the confusion often enveloping the "emotion" concept.

The Value of Emotion in the Economy of Life.—In view of the impulsive and disorganized overt behavior so frequently following upon emotional arousal, the question naturally arises as to the utility of the emotional mechanisms in the economy of modern life. That they are valuable for defensive and crude adjustment purposes under primitive conditions is a fairly plausible axiom, but, when it comes to making the fine and often diplomatic adaptations to involved situations demanded of twentieth century incumbents, it is rather a moot question whether full-fledged emotions are of any functional value. It is generally conceded that they lead to chaotic reactions poorly adapted to the exigencies of the problematical situations responsible for their arousal. This is Sandiford's[14] view when he says that "emotions overwhelm us every time, because we never seem able to prepare for them." Nevertheless, Sandiford believes that the arrestment of movement, the organic disturbances of circulation, respiration, and metabolism, and other internal processes associated with emotional excitement are all intimately concerned with the preservation of the individual.

In his treatise on the adaptive organism, Morrison[15] holds that nature actually abhors emotions, that they are genuinely dangerous under the conditions obtaining in our modern world. He mentions that emotional stress frequently paralyses action, that it holds cerebral processes in abeyance, and that, while under the influence of grief or infatuation, emotional content may come to "monopolize the focus of attention." This writer feels that excessive "affect" throws a heavy strain on the heart thus tending to keep the organism in a state of chronic stress all of which may lead to ill health or even psychoneurotic trends.

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[13] For a fuller account of the various concepts of emotion see, *Feelings and Emotions: The Wittenburg Symposium*, C. Murchison, Ed., Clark University Press, 1928.

[14] P. Sandiford, *op. cit.*, p. 129.

[15] H. C. Morrison, *op. cit.*, pp. 200–201.

Other students like to emphasize the value of emotions in adaptive behavior. Morgan[16] maintains that since individuals who have become organized in terms of having at hand ready responses to a variety of situations, do not fall prey to emotional stresses, others not so fortunately equipped are unwittingly stimulated into continued adjustment seeking effort by the operations of the autonomic nervous system. Thus we are told that nature, in the form of emotional mechanisms, stirs us to activity until we do something productive, if only by chance, of relief (restored equilibrium). This sounds very utilitarian and is no doubt true in a great many instances, but we must not overlook the patent fact that an appreciable fraction of emotional behavior is so capricious as to be not only maladaptive, but positively harmful. Witness, for example, the shooting frays of some jilted lovers or the drinking bouts of chronic failures.

Carr[17] concurs with the adjustment view of emotional unbalance. In commenting on Watson's results in connection with restraining the bodily movements of infants, he remarks that the emotions induced by such inhibition of spontaneous action result in "an organic readjustment by means of which the babe is enabled to overcome these restraints by reacting more vigorously and energetically than otherwise." Carr believes that an emotion once aroused is efficacious in overcoming the obstacles which originally gave rise to it. In this sense an emotion is an adjustive agent which enables the individual to respond to trying situations in aggressive and intrepid ways. Chapman and Counts[18] subscribe to substantially the same view when they say, "In fact, the chief function served by these tendencies (emotions) in promoting adjustment to a complex environment is to initiate activities which, through conflict, lead to new forms of behavior."

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[16] J. J. B. Morgan, *op. cit.*, pp. 148–149.

[17] H. A. Carr, *Psychology: A Study of Mental Life*, Longmans, Green & Company, 1925, p. 268.

[18] J. C. Chapman and G. S. Counts, *op. cit.*

Are Emotions Drives to Action?—We should like to advance the thesis that fundamentally both feelings and emotions (as relative degrees of strain or its absence) are effects of environmental obstacles standing in the way of a balanced realization of man's legitimate organic, social, and psychological needs (as delineated in Chap. V). Emotional stress evidently accrues in inverse proportion to the degree of satisfaction attained. That is to say that the greater the degree of realization of need, the less intense and shattering the emotional component aroused. Or we could say that the intensity of the emotion varies with the strength of the thwarted desire.[19]

The emotional stress developed by frustration may eventuate in more or less aggressive manifestations of attempted adjustment. But in view of the further maladaptations so frequently following upon these inappropriate efforts, why would it not be better to regard emotions as explosive energy discharges or, at best, as irrational attempts to secure satisfaction rather than as nature's alleged guarantee of continued adjustive effort? Attempts to interpret socially harmful behavior in terms of an inherent economy in nature have usually met with both theoretical and practical disappointments.

Of course, emotions may result from the thwarting of desires other than those regarded as fundamental, but this would be a case of perverted personality components causing further maladaptations. We think of the case of the store manager who caused the resignation of his entire (and efficient) corps of employees because of his explosive remarks in connection with a trivial incident involving their loyalty. But in this case too the emotion is destructive in its effects. Instead, then, of reading utility into negative (disturbing) emotions, our cue is to regard their appearance originally as signifying distress due to unnecessary frustration of life drives and, incidentally, to see to it that a temperate fruition of such satisfaction is provided (the desire for success and approval, for instance). In the case of personality perversions, appropriate remedial measures should, if possible, be provided.

In evaluating the plausibility of diverse views touching on the value of emotional stresses in the economy of functional life, it should be kept in mind that we have reference to the influences of full-fledged emotions in the sense of states incidental to a completely stirred-up condition of the physical organism. Feelings—much milder states of visceral stress—are obviously much less distracting in their influence and may be credited with providing personality with that affective tonus which makes life satisfying. But feeling, which colors experience and raises it above the plane of vegetative existence must be contrasted in degree with true emotion which tends to obscure foresight and encourage caprice.

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[19] W. C. Trow, *Educational Psychology*, Houghton Mifflin Company, 1931, pp. 45–51.

II. THEORIES OF THE NATURE OF EMOTION

Since the emotion concept, as an alleged distinct component of human personality, is so prominently featured in all treatises on psychology, it seems imperative that the student of personality acquaint himself with the various theories purporting to explain the true nature of emotional processes. Even if we should eventually come to the conclusion that emotional responses are essentially similar in the fundamental behavioral dimensions sense to nonemotional reactions (except, of course, that they are much more advanced on the intensity continuum), we would still be very much interested in contemplating the implications of the various theories concerned. Perhaps this orientation can be accomplished as well as any by the method of semihistorical approach considering the more outstanding proposals in connection with their authors' work.

Early Mentalistic Theories of Emotion.—Prior to approximately 1885, when scholars thought largely in dualistic terms, emotions were regarded primarily as "psychic" phenomena or as conscious mental states which were somehow connected up with physical organs of the viscera. And in harmony with the prevailing view which distinguished definitely between "flesh" and "spirit," emotions which expressed high social and moral values were considered to be spiritual, while those of "fleshly," questionable moral worth were regarded as base passions. This conception may be thought of as an advanced step beyond or as a liberal interpretation of the earlier doctrine of total depravity. It apparently never dawned on these early mentalists that emotions were anything but psychic (immaterial) states which by some hook or crook, beyond the ken of science, were efficacious in influencing flesh and blood organs of the body.

But even the ancient Greeks recognized to some extent the physiological correlates of emotional responses. While certainly not thinking in terms of our modern physiological syndromes of glandular, nervous, and circulatory action, they did endeavor to locate what they believed to be specific emotions in specific smooth-muscle organs. Incidentally, the parallels which they built up proved so popular that many of them have survived in popular phraseology to this day. They located sorrow in the heart, anger in the spleen, temperament in the bile, jealousy in the liver, hate in the gall bladder, and, as Perrin[20] brings out, they postulated "humors" or substances of some kind which, circulating through the blood, caused the various emotions noted. Who has not heard such expressions as "sad-hearted," "bilious disposition," or, to quote Garrett,[21] "spleeny" and "bowels of mercy." Many of these have become rubber-stamp expressions and are probably taken seriously by the unsophisticated. This tendency to naïve acceptance of unfounded psychological premises is no doubt explanatory to a great extent of the confusion obtaining among the laity as to the nature of emotional life in general.

Reacting against the current physiognomic and philosophical speculations concerning emotions, Darwin[22] in 1872 published the first objectively studied treatise on physiological emotions. Basing his deductions upon and linking the emotional expressions of animals and man with the popular hypothesis of an evolutionary scale (his own intellectual offspring), Darwin emerged with several interesting conclusions, the principal one of which was the idea that some human emotions are vestigial remains of types of responses which were once very valuable to our remote ancestors in meeting crises, but which are no longer of any particular utility. As we shall see, this doctrine is not unlike that held by some of our leading contemporary physiologists. Darwin's classical study, which emphasized so strongly the role of bodily structures in the expression of emotions, may be said to have furnished the basis for the subsequent formulations of James and Lange.

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[20] F. A. C. Perrin, *op. cit.*, p. 160.

[21] H. E. Garrett, *Great Experiments in Psychology*, D. Appleton-Century Company, 1930, p. 222.

[22] C. R. Darwin, *The Expression of Emotions in Man and Animals* (London, 1872), New York: D. Appleton-Century Company, Inc., 1896.

The James-Lange Theory of Emotion.—With characteristic originality, William James,[23] after considerable reflection and observation, came to the theoretical conclusion that emotions are conscious states induced directly by a widespread flood of sensations circulating in the entire viscera and musculature of the body. James recognized, of course, that the physiological turmoil was the effect of an exciting stimulus. This was in 1884. The following year (1885), the Danish physician, Lange,[24] came to conclusions similar to James's except that he emphasized the circulatory or vasomotor system as the source of emotional stimulation. Owing to this community of conclusions and to the authors' chronological proximity, we have come to speak of the theory involved as the James-Lange theory. Both James and Lange agreed that the physiological activities responsible for the "feeling" or "consciousness" of emotion were properly the *expressions of the emotion*—a suggestion which, owing to its dualistic inference, eventually brought the wrath of all good behaviorists upon their unsuspecting heads.

The unique feature of the theory was its reversal of the accepted common-sense view of the day which held that the emotion, as a confused conscious state of mind, *followed directly upon* an exciting stimulus, such as an accident or an insult, and that the emotion in turn *caused* the third link in the chain of events—the physiological disturbance. According to James and Lange, the reverse sequence is the true one: the stimulus as the exciting cause acts to generate the syndrome of visceral sensations, which in turn induces the confused psychic or mental event known as the emotion. To quote James[25]: "My theory . . . is that *the bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur IS the emotion.*" Further, James illustrates his reverse theory by declaring that "we feel sorry because we cry, angry because we strike, afraid because we tremble, and not that we cry, strike, or tremble, because we are sorry, angry or fearful, as the case may be."

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[23] C. G. Lange and W. James, *The Emotions*, Williams & Wilkins, 1922.

[24] *Ibid.*

[25] W. James, *Principles of Psychology*, Henry Holt & Company, 1908, vol. II, pp. 449–450.

To James, the time span between the visceral disturbance and the subsequent emotional feeling was imperceptible. He was interested in the logic of the sequence rather than the time relationship. This point brings his theory into closer harmony with the later theory proposed by Cannon. James[26] attempted further to buttress his logic by the following argument: "*If we fancy some strong emotion, and then try to abstract from our consciousness of it all the feelings of its bodily symptoms, we find we have nothing left behind,* no 'mind-stuff' out of which the emotion can be constituted, and that a cold and neutral state of intellectual perception is all that remains . . . purely disembodied human emotion is a nonentity." So we see that, while the theory stresses the absolute necessity of physiological disturbance as a requisite for true emotional experience, it concludes that the subsequent feeling or consciousness of the stirred-up state *is* the emotion. It is evident that this duality with its mentalistic inference was bound to run afoul of the materialistic doctrines of strictly objective psychologists. This, as we shall see, is exactly what happened, but in spite of it the theory has withstood the onslaughts of numerous critics, behavioristic and otherwise, remarkably well.

Criticisms of the James-Lange Theory.—Important criticisms of the James-Lange formulation, other than the one pertaining to its mentalistic implications, which psychologists generally recognize as being inherent in the psychological mores of James's day, tend to be based upon two considerations: *viz.*, (1) its failure to provide any criteria for determining the differentiating factors among specific emotions, such as fear, anger, or joy, and (2) experimental evidence damaging to its major claims. The first criticism is no doubt a fair one, but as Perrin[27] remarks, since the characteristic physiological disturbances which underly each specific emotion have not yet been adequately described, it is futile to condemn the James-Lange theory for failing to differentiate among them. This point needs elaboration, but begging the reader's indulgence, we shall hold it in abeyance until a later section. As for criticisms from experimental evidence, they lead us naturally into a discussion of a rival theory in connection with which most of the data involved were derived.

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[26] *Ibid.* See also W. James, The Physical Basis of Emotion, *Psychological Review,* 1: 516–529, 1894.

[27] F. A. C. Perrin, *op. cit.,* p. 165.

Cannon's Emergency Theory of Emotion.—In attacking James and Lange and in developing his own thalamic theory of emotions, Cannon[28] has emphasized particularly two features of the physiological processes incidental to full-fledged emotional responses. He has greatly clarified the functions of the autonomic nervous system as a stimulator of widespread visceral disturbances associated with emotive behavior. More important for his doctrine, however, is his evidence touching on the thalamus (diencephalon) as the distributor of exciting stimuli and as the differentiator of emotional quality.

The autonomic nervous system—a complex series of ganglia paralleling and closely associated by connecting fibers with the spinal cord—as the name implies controls those inner vegetative functions of heart action, respiration, digestion, blood distribution, and glandular activity over which the individual has little or no voluntary control. All these processes function in accordance with the balance of stimulation provided by the competing branches of the autonomic. These branches are said to be the sympathetic or thoracic lumbar (the middle section), the cranial (upper section), and the sacral (lower) part.

Cannon found that while all organs and glands of the viscera are connected with one or more of the three autonomic sections, during intense and especially unpleasant emotions, such as anger or fear, the sympathetic is in the ascendancy. Under the excitement of an intense emotion, the sympathetic division innervates the organism to hyperactivity characterized especially by increased heart action, higher blood pressure, and increased breathing rate. Under stress of anger the adrenal glands are caused to secrete the powerful adrenalin drug into the blood stream, with the result that sugar, released by the liver, is mobilized in the blood stream for quick delivery to needy tissue; heart action is rapidly stepped up, respiration is quickened, excessive perspiration is generated, the face becomes flushed, and very soon the pulsating organism is in a position to fight with a show of strength not ordinarily available.

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[28] W. B. Cannon, James-Lange Theory of Emotions: A Critical Examination and an Alternative Theory, *American Journal of Psychology,* 39: 106–124, 1927. See also the earlier theory by G. Sergi, Ueber den Sitz und die Physische Grundlage der Affekte, *Zeitschrift für Psychologie,* 14: 91–100, 1897.

In the meantime, however, digestive processes that may have been going on under the influence of the craniosacral divisions, are temporarily inhibited; the flow of gastric juice, bile, and pancreas are stopped, and peristaltic reverberations of stomach and intestines discontinue. And all this is caused by exposure to an exciting event reacted to by way of the sensory channels. As for the cranial and sacral sections of the autonomic system, they are credited with being in control when the individual is enjoying the neural gratifications incidental to feeding, aesthetic appreciation, sexual activity, and general organic equilibrium (freedom from visceral stress).

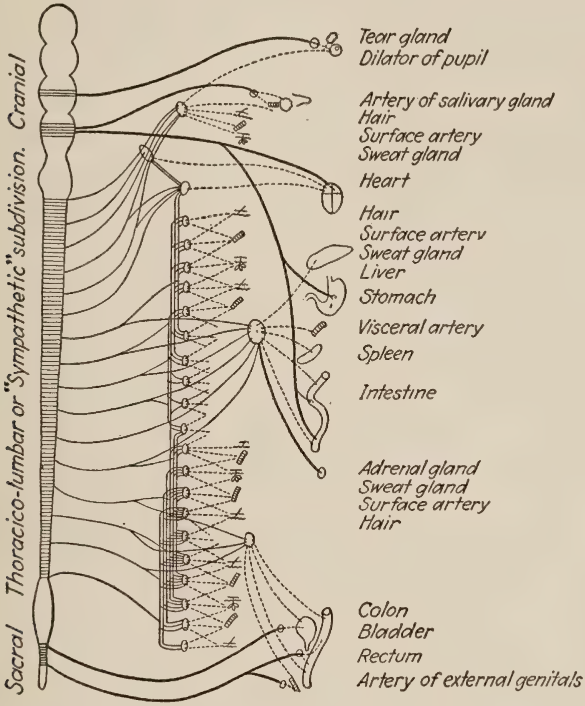
Cranial
Thoracico-lumbar or "Sympathetic" subdivision.
Sacral
Tear gland
Dilator of pupil
Artery of salivary gland
Hair
Surface artery
Sweat gland
Heart
Hair
Surface artery
Sweat gland
Liver
Stomach
Visceral artery
Spleen
Intestine
Adrenal gland
Sweat gland
Surface artery
Hair
Colon
Bladder
Rectum
Artery of external genitals

FIG. 9.—Schematic diagram of the autonomic nervous system. (*From W. B. Cannon, American Journal of Psychology*, 25: 258, 1914.)

Since the organism, when under conditions of great stress requiring vigorous action, quickly adapts itself by developing increased strength, banishing fatigue, and by causing quick coagulation of blood, Cannon believes that it has a natural tendency toward survival. This is his *emergency theory* which is based on the evolutionary assumption that primitive man, often hard put to it to save his life from the attacks of animals and enemy tribes, developed the elaborate defense mechanisms in question. This view finds it embarrassing to explain why modern man with his relative freedom from personal combat and his long history of cultural attainment should still be equipped so well with automatic emotion-arousing mechanisms.

It is apparently another case of attempting to explain socially undesirable behavior in terms of an alleged inherent economy in nature. Full-fledged emotions of the unpleasant sort as they now function are obviously detrimental in their effects upon both individual consistency and social harmony. Since they are to such a marked extent explosive and shattering to the integrity of behavior, there is no particular point in reading rationalized utility into them in order to conform to some notion of long-range developmental inevitability.

Role of the Thalamus in Cannon's Theory.—Thus far, in his conception of the patterns of visceral stress incidental to emotional experience, Cannon is in substantial agreement with the crude "expression of the emotions" idea voiced by James. But Cannon[29] has made much of the dual objection that "the same visceral changes occur in very different emotional states and in non-emotional states," thus vitiating the idea that "the responses of the viscera . . . offer a satisfactory means of distinguishing emotions which are very different in subjective quality" and that an emotional experience is not altered when the viscera are totally separated from the central nervous system. Cannon adds the further objection that "visceral changes are too slow to be a source of emotional feeling" and that "artificial induction of the visceral changes typical of strong emotion does not produce them."

In mentioning these objections to the idea of visceral configurations of disturbance as causes of specific emotions, Cannon is leading up to his thesis, *viz.*, that emotions actually result from the interactivity of the cerebral cortex and the optic thalamus or diencephalon. According to him, when a sensory channel (the eye, for instance) is stimulated by exposure to an exciting event, the resulting nerve impulses are relayed directly (or indirectly by way of the cerebral cortex) to the thalamus, there to be redirected *both to the autonomic system* responsible for the arousal of the glandular and smooth-muscle organs of the viscera *and to the cortex of the cerebrum* (possibly by irridation) where the feeling of the emotion is presumably registered. Thus the emotion itself and the bodily expressions of the emotion occur practically synonymously in point of time.

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[29] W. B. CANNON, *Bodily Changes in Pain, Hunger, Fear and Rage*, D. Appleton-Century Company, Inc., 1929, Chap. 19.

Theoretically, then, since the nerve impulses are transmitted in *both directions at once,* an emotion could be experienced without the supposedly indispensible accompanying bodily upheaval. Several investigators have demonstrated that the latter phenomenon can and does occur. But, as we shall see later, Cannon got himself into trouble with the materialists when, after suggesting that the neurons concerned with emotional expression lay within and near the thalamus, he declared that "the *peculiar quality of the emotion is added to simple sensation when the thalamic processes are roused.*"[30] For ascribing this profound differentiating function to the optic thalamus mass, Cannon, in spite of the objective and experimental nature of his physiological researches, has been called a mentalist whose only contribution over that of James and McDougall (with his emotionally cored instincts) is his experimental location of the part of the brain essential to emotional experience.[31]

Experimental Evidence of Nature of Emotions.—To Cannon's credit, it must be admitted that his contention that the unique quality of a given emotion is contributed by the diecephalon rather than by any differentiation in the pattern of visceral response, which he believes to be approximately the same in each true emotion of intense joy, sorrow, fear, anger, disgust, and the like, is based upon substantial experimental evidence growing out of his own and other physiologist's researches.

In order to determine whether an intact sympathetic is essential to emotional experiences, Cannon[32] removed (by surgery) the same from the autonomic system of a number of cats. Since such an operation would obviously remove all chance for a diffusion of visceral sensations as usually associated with fear or

[30] *Ibid.*, p. 362.

[31] J. S. Gray, An Objective Theory of Emotion, *Psychological Review,* 42: 108–116, 1935.

[32] W. B. Cannon, *op. cit.*, pp. 348–350.

rage, the question naturally arose whether the desensitized animals would upon recovery respond as before to typical exciting stimuli. Singularly enough, the cats, in spite of the operation, all displayed definite signs of anger in the form of hissing, baring of teeth, and the like when confronted with barking dogs. This result naturally tended to create grave doubts as to the validity of the James-Lange theory of physiological disturbance as causes of emotional feeling.

The same investigator[33] found also that even when the cortex was completely removed from a cat, the decorticated feline still displayed considerable emotional excitement, a finding which suggested strongly that emotions (rage at least) are dependent upon innervations from the subcortical regions where the thalamus mass is located. These results have been substantiated by Bard,[34] who observed the effects of the removal of both the cortex and various sections of the brain stem in a sizeable number of cats (about fifty). According to him, the evidence in the matter points to the lower thalamus as the seat of emotion-producing innervations.

Many years ago, Sherrington,[35] the English physiologist, transected the spinal and vagosympathetic nerves in the lower cervical region in dogs in a way designed to inhibit entirely all sensations of the viscera and of the muscles and skin behind the shoulders. In addition, the circulatory apparatus was disconnected from the entire brain area. Reporting on one emotionally inclined female, Sherrington states that "the reduction of the field of sensation in this animal by the procedure above mentioned produced no obvious diminution of her emotional character. Her anger, her joy, her disgust, and when provocation arose, her fear, remained as evident as ever. Her joy at the approach or notice of the attendant, her rage at the intrusion of a cat with which she was unfriendly remained as active and thorough." And in order to check on the possibility that these animals might be reacting by way of previously acquired emo-

[33] *Ibid.*, pp. 362–365.

[34] P. Bard, Neuro-humoral Basis of Emotional Reactions, In, *Foundations of Experimental Psychology*, Clark University Press, 1929.

[35] C. S. Sherrington, Experiments on the Value of Vascular and Visceral Factors for the Genesis of Emotions, *Proceedings of the Royal Society* (London), 1900, p. 397. See also, by the same author, *The Integrative Action of the Nervous System*, Yale University Press, 1923, pp. 259–261.

tional habits subsequently retained (in potential) in brain structure, Sherrington repeated his experiments upon nine-week-old puppies. Since the results were the same as before, it is no wonder that this investigator concluded that visceral organic sensations are not essential components of emotional experience. Here again we have evidence apparently inimical to the soundness of James's thesis of emotions as results of complex bodily sensations. But as Angell[36] has said, the facial and cranial muscles were still unimpaired and doing business as usual, thus, as James himself probably would have insisted, saving the day for his doctrine.

Perhaps most interesting of all is the human case reported by Dana[37] who has been promoting the thalamic theory contemporaniously with Cannon. He came in touch with a woman patient suffering from total paralysis of the muscles of her trunk and limbs. As a result of a neck and spinal cord injury she has reduced to a complete loss of sensitivity. In spite of these major handicaps, this woman was able to respond as before in situations calling for a display of joy or grief. It appears from this case that personality can survive the loss even of all receptivity to physical sensation in regions lying below the all important (for emotions) thalamus.

Adrenalin and Simulated Emotions.—It has been suggested that if an emotion is simply an individual's recognition of the stirred-up state of his own visceral organs, he should recognize as clearly and feel as intense about a synthetic emotion induced by the injection of adrenalin—the same powerful drug secreted by the adrenal glands and known to be responsible in its natural state for rapid heart beat, flushed skin, increased respiration and all such other intensified changes as are found in true emotions. But this does not seem to be the case. There must be some component in the stimulus situation essential to the definite recognition of a complete emotional experience. This factor has been found by Landis[38] to be presumably a "satisfactory reason" for the emotion which satisfies the requirements of the logic of the total situation encountered.

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[36] J. R. Angell, A Reconsideration of James' Theory of Emotions in the Light of Recent Criticisms, *Psychological Review*, 23: 251–262, 1916.

[37] C. L. Dana, The Anatomic Seat of the Emotions; A Discussion of the James-Lange Theory, *Archives of Neurology and Psychiatry*, 6: 634–639, 1921.

[38] C. Landis, Studies of Emotional Reaction: II, General Behavior and Facial Expression, *Journal of Comparative Psychology*, 4: 496, 1924.

As to the actual effects of adrenalin injections in the case of simulated emotions, investigators have secured fairly definite evidence. Cantril and Hunt,[39] who studied normal subjects summarized their findings as follows: "In general, the injection of sufficient amounts of adrenalin will reproduce roughly the organic picture usually characterized as emotion. . . . The production of this organic state characteristic of the adrenalin syndrome gives differing results. Some subjects report merely the organic syndrome. Some report an associated emotional content, saying they feel 'as if afraid' or 'as if in great joy,' etc. In a few cases a complete emotion is present, and this emotion seems satisfying and genuine." Incidentally, Landis and Hunt[40] found corresponding results in a study of psychopathological patients.

It appears, then, that while artificially induced syndromes, as they are usually called, of visceral action can be very definitely recognized, they do not as a rule fulfill the requirements of a true emotion. Certainly this is true in the case of intelligent subjects who require, in addition to the feeling, a causal connection between the pattern of the stimulating situation encountered and the intensity of the organic upheaval. In short, most individuals must, in order to enjoy a genuine "feeling" of an emotion, experience more than the physiological disturbance emphasized so exclusively in the James-Lange theory. Thus we must be cognizant of the fact that this "feeling" is a more tangible factor than any localized neural or physiological pattern of response. As Landis and Hunt,[41] as well as James and Cannon have pointed out, "the emotional *awareness* must be considered as a process involving higher perceptual or intellectual functions."

Summary of the Views of James and Cannon.—In summarizing comparatively the theories of James and Cannon, whose doctrines, incidentally, we are interested in primarily from the standpoint of the light they may throw on the ultimate nature of so-called "emotional processes" as components of personality rather than from the angle of their association with individuals or chronological happenings, we see that the latter (Cannon) has in reality accepted James's postulation of visceral disturbances (as caused by autonomic innervation) as an important phase of the total emotions picture and has in addition offered an explanation for the differentiation of emotional patterns. Recognizing the fact that the configurations of visceral stress are essentially similar for all types of true emotions, Cannon has emphasized the function of the diencephalon as a distributor and as an influencer of the quality of potential emotional experience. He has offered clinical evidence showing that the thalamus is not only closely connected with emotional behavior, but that a release (through disease or injury) of normal cortical inhibition causes its possessor to indulge in excessive and sometimes uncontrollable emotional displays.[42] As for differentiation between one type of emotion and another, *i.e.*, joy and anger, this writer attributes such power to that agency by means of which the meaning of the exciting stimulus is interpreted—the intellect (cortex).

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[39] H. Cantril and W. A. Hunt, Emotional Effects Produced by the Injection of Adrenalin, *American Journal of Psychology*, 44: 300–307, 1932. Reprinted by permission of the publishers.

[40] C. Landis and W. A. Hunt, Adrenalin and Emotion, *Psychological Review*, 39: 467–485, 1932.

[41] *Ibid.*, p. 484.

While the thalamic theory has apparently—and no doubt rightfully so—superseded the James-Lange proposal, in justice to the latter it must be said that it has not been definitely disproved by the experiments of Sherrington and Cannon. In the first place, animals who have been completely deprived of their visceral sensitivity but who subsequently respond in ways apparently approximating true emotion may not, so far as we know, be doing so in reality. And in the second place, as previously touched upon, under such conditions the muscles and other physical structures of the head and face are still subject to innervation and can and do exhibit marked disturbances in the form of recognizable emotional responses.

A Behavioristic Theory of Emotion.—In order to indicate further the complexity of the subject under discussion and to amplify the interested reader's conception of the problems involved in personality study, we shall present in this section an interesting controversy which has recently resulted from an attempt to put emotion theory on a strictly materialistic basis. Gray,[43] who, judging from his publications, is evidently a disciple of the Weiss (the late A. P. Weiss of Ohio State University) school of behaviorism, has called into question Cannon's whole thalamic theory. While recognizing the scientific nature of Cannon's experimental evidence he has labeled him as a mentalist and as a speculator because of his reference to "feeling tone" as a presumably vitalistic production of thalamic processes.

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[42] See also, T. V. Moore, *Dynamic Psychology*, J. B. Lippincott Company, 1924, pp. 118–119.

Gray contends that Cannon has produced no evidence to prove that feeling tone is added by the thalamus, that he has only indicated the nonessential nature of the higher cortical centers for emotion. He insists flatly that the thalamus adds nothing to the neural flux which passes through it. To buttress his position he refers to Herrick,[44] who has called the central system a "switchboard mechanism" which merely distributes neural impulses to their appropriate channels, and to Newman,[45] who writes, "The brain is something like a telephone exchange, where communication is established between numerous parts of the organism."

Being anxious to put the emotion phenomenon upon a strictly objective foundation that would avoid all the objections usually raised against the theories of both James and Cannon, Gray has proposed a biochemical theory, which to him appears to be airtight. Reasoning that the blood and body tissues must maintain a constant supply of glucose, he suggests that the liver must of necessity deliver a quantity of this substance that is commensurate with the rate of consumption. This means of course that there must be some control mechanism, sensitive to the chemical condition of the blood, at hand to maintain a balance. In the case of the liver, Cannon[46] has shown the adrenal glands to be its regulator as well as the producers, through the secretion of adrenalin, of the usual physical "expressions" of emotion. Of course, the other endocrine glands add their hormones to the chemical amalgamation accruing in any given emotional experience. As Weiss[47] says, "The whole system of the glands of internal secretion may be regarded as a regulating mechanism by which the nervous and muscular tissue is being prepared to meet the energy demands of certain stimulating conditions."

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[43] J. S. Gray, *op. cit.* See also the recent experimental findings of Lashley which corroborate some of these statements. (K. S. Lashley, The Thalamus and Emotion, *Psychological Review*, 45: 42–61, 1938.)

[44] C. J. Herrick, *The Thinking Machine*, University of Chicago Press, 1929, Chap. 8.

[45] H. H. Newman, *Outlines of General Zoology*, The Macmillan Company, 1924, p. 281. Quoted by permission of the publisher.

[46] W. B. Cannon, *op. cit.*, Chaps. 3, 4.

Proceeding from this angle, Gray believes that an emotion may be accounted for in terms of a definite blood-chemistry formula. A specific emotion is not of course caused by the functions of a certain endocrine, rather "all the endocrines function during all emotions, but in different proportions." The adrenals, for instance, are especially active during rage while the gonads (as endocrines) are more in evidence during the emotion of love. Gray gives his key to the problem of differentiation of the character and quality of emotional experiences when he says, "Each emotion has its characteristic blood chemistry formula. The blood chemistry in rage differs from the blood chemistry in love, and the blood chemistry in fear differs from that in either rage or love. The reason is that the endocrines behave differently for these respective emotions."

This, in a nutshell, is Gray's chemicoendocrinological theory of emotions. It is intended to explain their etiology, their physical expressions, their specific quality in any given case, and even how Sherrington's and Cannon's animals, though "neurally decapitated," could receive stimuli and thus feel emotional. As to the latter point, whereas an individual with an intact autonomic system (and its neural tributaries) would feel an emotion "all over," because he is feeling his own blood, if his total visceral sensitivity were cut off, he would still experience emotion which was due to stimulation from the vascular proprioceptors located in the head. Thus the "feeling" of the emotion, concerning which the behaviorists have been so concerned (James's mentalistic element and Cannon's thalamically determined but cortically projected "feeling tone"), is nothing more than a "proprioceptor stimulation caused by the chemical composition of the individual's own blood. The way he feels is determined by his own blood chemistry."

This statement is intended presumably to settle the pestiferous matter of subjective dualism vs. objective monism as far as emotional phenomena are concerned. It may be said as well to be emblematic of attempts to hew close to the line dictated by the scientist's fundamental principle of parsimony. And science, be it remembered, is very distrustful of any suggestion smacking of mysticism.

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[47] A. P. Weiss, *A Theoretical Basis of Human Behavior*, R. G. Adams and Company, 1925, p. 371.

Objections to the Chemical Theory of Emotion.—Our account of the Cannon vs. Gray verbal tilt would not be complete without hearing the former's rebuttal. As it happened, Cannon was abroad at the time of the appearance of Gray's disparaging (to Cannon) paper. When, upon his return, he encountered the new "objective theory of emotion," he set himself the task of defending his own postulations and examining the verity of the substitute theory. Being nettled by the odious accusations of being called a "mentalist" and a "speculator" he proceeded to defend himself on these points with much vigor.[48] To the defense of his thalamic theory, he marshaled an impressive array of apparently indisputable evidence which is too technical for our purposes, but which, so Cannon says, proves his contentions conclusively.

As for the chemical theory of emotion, Cannon delivered himself of a caustic and most devastating analysis of its logical imperfections. If he is to be believed, Gray has nothing more substantial than quicksand to stand on with his "objective theory." He says, "There is not the slightest shred of evidence that 'all the endocrines function during all emotions.' The claim that 'each emotion has its characteristic endocrine function pattern' is the wildest type of theorizing, without any basis whatever." With reference to Gray's claim that the blood-chemistry formula provides the "all over" feeling in emotions, he refers to the case of individuals who "because of damaged cortical control of the thalamic region on one side, have unilateral emotional feelings." Thus Cannon concludes that the "objective theory of emotion" has been shown to rest on "baseless surmises."

III. THE DIFFERENTIATION OF EMOTIONAL RESPONSES

In studying any aspect of human personality which, for purposes of convenience in making such study, has been accorded a relatively separate category of existence, we are usually confronted with the eternal question of whether it is specifically innate, in the sense of being present at birth in a well-coordinated status, or whether we must attribute its presence and pattern to the ever-modifying circumstances of the experience continuum. So it is with the many supposedly differentiated forms of emotional reaction—are they inherent in the genetic constitution or are they learned in connection with the exigencies of stimulating conditions?

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[48] W. B. Cannon, Gray's Objective Theory of Emotion, *Psychological Review*, 43: 100–106, 1936.

Classifications of Emotions.—A number of attempts have been made by psychologists holding varying points of view to classify emotions as they obtain before environmental pressures have had an opportunity to modify them or as they appear to observers at any point in the maturation scale. Typical of these formulations are those by McDougall, Gates, Allport, and Watson. It will be remembered that McDougall,[49] as one of the earlier advocates of innate instincts, postulated an emotional core for each in his various instinct lists. He says, for instance, that the escape instinct is accompanied by a concomitant fear emotion, the combative instinct by anger, and the parental instinct by tender emotion or love. McDougall's proposal is obviously of the armchair variety and rises or falls with the fortunes of his now discredited instincts.

Gates[50] offers a list based upon the operations of the autonomic system. Although these are not called innate, they are regarded as constituting the fundamental organic basis for the differentiation of emotional types. Gates includes: (1) the strong, "emergency" emotions, depending on the discharge of the sympathetic divisions of the autonomic system; (2) the mild, joyful, upbuilding emotions, depending on the activity of the sacral and cranial divisions of the autonomic system; and (3) the sex emotions, including lust, depending on certain activities of the neural system. Gates includes in his classification the milder feelings which, as he admits, do not really qualify as emotions in the sense of being intense or cataclysmic. Allport[51] classifies the affective elements of his emotions as being *unpleasant* (disgust, fear, rage, grief) and *pleasant* (elation, mirth, and love, both conjugal and consanguineal).

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[49] W. McDougall, *An Introduction to Social Psychology*, John W. Luce & Company, 1923, pp. 47–119.

[50] A. I. Gates, *op. cit.*, pp. 154–159.

[51] F. H. Allport, *Social Psychology*, Houghton Mifflin Company, 1924, p. 85.

Watson's Assumption of Original Differentiated Emotions.—But it is Watson's[52] behavioristic classification of emotions that has caused such widespread comments and that has become almost a household belief. Watson has somehow been able to create the impression that his alleged three basic emotions are innately differentiated beyond the peradventure of a doubt. Actually, there is considerable question as to their existence as usually described. In his famous experiments with infants at Johns Hopkins (to be described more in detail later), Watson claims that he found the primary emotions, those characterizing the original, fundamental nature of man, to be *fear*, *rage*, and *love* (love in the broad sense of the term as used by Freud with reference to sex).

These three are said to be clearly discernable as such, needing only certain rather specific stimuli to bring them out. All other emotional forms or compounds appearing later are accounted for in terms of simple learning in the form of the conditioning process. According to Watson, the stimuli which are *originally* sufficient to bring out the three emotional types are: *fear*, loud sounds and the loss of support; *rage*, curtailment of an infant's movements; and *love*, patting, rocking, and stroking the erogenous areas of the body. Watson also ascribes to each of the three emotions characteristic responses which are said to be safe clues to the identification of the particular emotion under process.

Criticisms of Watson's Interpretations.—Watson's belief that original emotional responses are quite definite and well organized is not shared by certain of his colleagues, some of whom are apparently good behaviorists. They object to his classification on both theoretical and experimental grounds. Ragsdale[53] believes that much of the definiteness and organization mentioned was *read into* the children's behavior by the examiner who was perhaps looking for such organization. He further suggests that the responses accruing in the case of fear are nothing but a miscellaneous set of *avoiding* reactions; that those observed in anger are violent activities which later become more differentiated as *approach* reactions; and that those associated with love are merely passive attitudes or *mild approaches* toward the source of stimulation. In short, fear, rage, and love are but *class names* for a wide variety of separate and individual responses which have been arbitrarily subsumed under the three respective classifications.

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[52] J. B. Watson, *Psychology from the Standpoint of a Behaviorist*, J. B. Lippincott Company, 1924, Chap. 6.

[53] C. E. Ragsdale, *Modern Psychologies and Education*, The Macmillan Company, 1932, p. 126.

As mentioned by Stoddard and Wellman,[54] it should be remembered that the early researches of Watson and his assistants were carried out with few controls. Thus it would be better for all concerned if present-day students would not regard them with such an air of finality. As a matter of fact subsequent experiments of a more meticulous nature have called their findings into serious question. At the Ohio State laboratory, Pratt, Nelson, and Sun[55] found that the responses of infants to the experience of being held by the arms do not substantiate the findings of Watson. Very few of their 66 infants responded in terms of "rage" or "defense" as described by Watson. More than half of the infants remained wholly passive and many of the others soon became so.

Bridges,[56] who has also studied the original emotional responses of infants under laboratory conditions, failed to find any such precise, well-defined emotions as fear, love, and rage. Like so many other investigators, she found that definable emotional patterns evolve gradually from the originally undifferentiated behavior of the youngsters. Only at about three months of age were the children's responses characterized by fairly definite pleasure and anger responses.

It is in the careful work of the Shermans[57] that the dogma of inherited, innate emotional patterns is most clearly challenged. Their studies do not indicate the presence of originally differentiated emotional forms in infants; rather, they found that "reactions are at first generalized." In harmony with Ragsdale's previously mentioned theory, they noticed that the only type of differentiated responses forthcoming were those concerned with (1) "rejecting the stimulus, and (2) accepting the stimulating conditions." These results are clearly in harmony with the current organismic principle that general, undifferentiated responses presage later specific, differentiated ones in very young developing organisms.

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[54] G. D. Stoddard and B. L. Wellman, *Child Psychology*, The Macmillan Company, 1934, p. 303.

[55] K. C. Pratt, A. K. Nelson, and K. H. Sun, *The Behavior of the Newborn Infant*, Ohio State University Press, 1930.

[56] K. M. B. Bridges, Emotional Development in Early Infancy, *Child Development*, 3: 324–341, 1932.

[57] M. Sherman and I. C. Sherman, Sensory-Motor Responses in Infants, *Journal of Comparative Psychology*, 5: 53–68, 1925.

Facial Expressions as Clues to Emotions.—Very suggestive is the study by Mandel Sherman[58] in which the ability of observers to name and differentiate the responses of infants to stimuli regarded as germane to specific emotional arousal was investigated. After taking motion pictures of children, in which their emotional reactions to the Watsonian interferences, such as sudden loud sounds, sudden loss of support, and hampering of bodily movements, were shown, Sherman had the film cut up in such a way that the responses were separated from the stimuli which produced them. He then asked experienced students of child psychology to identify the differentiated emotions registered upon the film. Singularly enough, these individuals were not able to differentiate among the various responses with any degree of unanimity.

Other groups of individuals were asked to name emotions when they were connected with irrelevant stimuli and to assign the correct stimuli to given emotions. In all cases there were radical disagreements. Sherman naturally concludes from his evidence that, Watson notwithstanding, there are no such clear-cut, innate emotional responses as fear, anger, and love in the reportoires of newborn infants. He suggests rather that infants make gross, undifferentiated defense reaction against interference with a relatively pleasurable state of equilibrium. Observers who attempt to recognize differentiated emotional responses are thrown back upon the necessity of securing "a knowledge of the causative stimulating conditions."

A number of other studies touching on the possibility of identifying emotional expressions as registered in photographs have been reported—usually with the same results. In Feleky's[59] study, a group of one hundred judges was presented with a series of pictures of a woman's face and asked to check the emotion expressed in each pose. While the judges were able to agree fairly well in the case of the more outstanding emotions, such as laughter, contempt, and aversion, in general, wide variations were found. In a similar experiment, carried out with the assistance of an experienced amateur impersonator, Ruckmick[60] secured the same variable results. He found that "as a rule the 'primary' emotions, as love and hate, joy and sorrow, are much more uniformly interpreted than the 'secondary' ones, like repulsiveness, surprise, distrust and defiance." It also appeared that the judgments were influenced as much *by the moods of individual judges* as by the facial expressions themselves.

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[58] M. Sherman, Differentiation of Emotional Responses in Infants, *Journal of Comparative Psychology*, 7: 265–284, 335–351, 1927.

[59] A. M. Feleky, The Expression of the Emotions, *Psychological Review*, 21: 33–41, 1914.

In an investigation by Langfeld,[61] in which judges were asked to differentiate among a series of emotional expressions taken from the photographic impersonations of an experienced actor, only about one-third of a total of 525 judgments were correct. In this instance, laughter (64 per cent) and pain (50 per cent) were most readily identified, while anger (30 per cent) and disgust and fear (36 per cent each) were relatively low in accuracy.

Most interesting was the experiment by Landis,[62] designed to disclose whether emotions as reported are accompanied by differentiated and readily recognizable facial expressions. The facial expressions of subjects were photographed while they were responding to such emotion-producing stimuli as smelling a bottle of ammonia, looking at pornographic pictures, decapitating a live rat, receiving a severe electric shock, and looking at pictures of loathsome diseases. In addition to photographing the responses of anger, surprise, disgust, and sex excitement with great care, this investigator drew black lines on the subject's face for the purpose of making the expressions stand out better in the pictures. In the end, Landis found that individuals vary greatly in reactions to the same emotional situations. He summarizes as follows: "With no verbal report of a given emotion did a muscle, group of muscles, or expression occur with sufficient frequency to be considered characteristic of that emotion. There is no expression typically associated with any verbal report."

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[60] C. A. Ruckmick, A Preliminary Study of the Emotions, *Psychological Monographs*, vol. 30, no. 136, 1921, pp. 30–35.

[61] H. Langfeld, The Judgment of Emotions From Facial Expressions, *Journal of Abnormal Psychology*, 13: 172–184, 1918.

[62] C. Landis, Studies of Emotional Reactions: II, General Behavior and Facial Expressions, *Journal of Comparative Psychology*, 4: 447–511, 1924.

Interpretations from Objective Evidence.—In view of the fact, then, that the emotions of children can only be recognized with any degree of certainty when the nature of the conditions causing their rise are known, it becomes encumbent upon us to admit that original emotional reactions are not definitely differentiated. As Sherman[63] says, "The emotions are not hereditarily patterned, nor are they present at birth in definite forms which can be clearly differentiated." Subsequently, Sherman states the only logical alternative thesis as follows: "As the infant gains experience, his emotions develop from his early, undirected aimless activities." This is tantamount to saying that, whereas a child's reactions are at first means of adjustment to physical stimuli, they later become associated with definite psychological and social situations possessing significance for general security. Specific emotional reactions like fear or joy can become differentiated only with age, experience, and the growth of meaning. With the development of intellectual insight into the significance for personal security of various situations, emotional reactions, at first elicited by only a few simple physical stimuli, eventually become attached to a wide variety of meaningful (for security) situations. This is the view of behaviorists and functionalists alike who are not committed to the innate, potential thesis of personality development.[64]

A theory of emotions as conditioned responses based upon originally unconditioned (undifferentiated) affective responses also is advanced by Harlow and Stagner.[65] They believe that all subsequent emotions are built upon the "innate components" or four "fundamental feeling-tones"—pleasure, unpleasantness, excitement, and depression. The differentiation of various emotions is not due to differences in neuro-muscular response or visceral disturbance, but to the "cognition of the stimulating situation." These writers introduce the vitalistic element by asserting that emotions are "conscious feeling induced by actuation of sensory thalamic projection centers." They are inclined to upbraid Dashiell and Sherman for their unwillingness to subscribe to the mentalistic idea of "conscious concomitants of emotions."

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[63] M. Sherman, Mental Hygiene and Education, Longmans, Green & Company, 1934, pp. 7–11.

[64] See, for example, J. F. Dashiell, Are There Any Native Emotions? *Psychological Review*, 35: 319–327, 1928.

[65] H. F. Harlow and R. Stagner, II. Theory of Emotions, *Psychological Review*, 40: 184–195, 1933.

In summarizing, we can say that for most students, who have concerned themselves with the problem, emotions are originally crude undifferentiated responses to physical stimuli and are apparently intended to secure freedom from physical strain. Emotions become differentiated with the accumulation of experience and as responses become attached to a variety of significant social situations. As for mature emotional patterns, whose physiological components (visceral disturbance) are generally conceded to be very similar, their specific identification is made upon a variety of bases. For most students of personality, cognizance of the circumstances of the stimulating situation is the criterion of classification, but others depend in addition upon blood chemistry[66] kinesthetic sensations resulting from specific bodily sets,[67] and thalamic influence coupled with cortical feeling.[68]

Validity of the Emotion Concept.—When one "wades" through the extensive literature on emotions and contemplates the many divergent points of view, as well as the rather hazy definitions offered, he begins to wonder about the utility of the whole emotion idea, at least when considered as a separate category of human behavior. The organismic, interrelated nature of all response leads one to wonder as well if there are any discrete forms of behavior essentially different in kind from any other form. So far we have found only one distinguishing feature of emotion that sets it off from most other separately labeled bodily reactions—its relatively greater intensity while in process. And this dynamic aspect can be matched by other nonemotional complex bodily responses such as athletic activities which, incidentally, are not usually classified as involving true emotional pictures.

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[66] J. S. GRAY, *op. cit.*

[67] F. H. ALLPORT, *Social Psychology*, Houghton Mifflin Company, 1924, pp. 92–93. Also, E. C. Tolman, *Purposive Behavior in Animals and Men*, D. Appleton-Century Company, Inc., 1932, pp. 266–268.

[68] W. B. CANNON, James-Lange Theory of Emotions: A Critical Examination and An Alternative Theory, *op. cit.*

These and other considerations have led a number of qualified psychologists to inquire whether the emotion theory actually serves a useful purpose in practical psychology. In spite of the fact that nearly all textbooks in psychology, modern or otherwise, are loaded with discussions touching on the nature and function of emotions, these students believe that we could greatly clarify our conception of the nature of the human personality if we dispensed with the vague and ambiguous emotion theory just as we did with the pestiferous "will" and "instinct" concepts.

In a convincing paper, Duffy[69] raises the question as to whether "*there is an important difference in kind between emotional and other responses.*" She points out the fact that emotion is not necessarily a unique state; rather, that it usually represents some ill-defined point on a behavior scale. Since the emotion concept is essentially relative and in view of the fact that no one knows when a nonemotional response ends and an emotional one begins on the intensity gradient, it would be better to give up the emotion idea as a separate and superficial category of behavior, and endeavor to define all behavior in terms of general fundamental dimensions of response. In this way, we could evaluate and describe activity as being relative in any given case to the intensity of the excitation impinged upon the reacting organism. There would be no need for thinking of emotion as a *kind* of reaction; it would rather be a variation in *degree* on a scale of fundamental *dimensions* of behavior as this occurs under varying conditions of stimulation. Duffy shows also how the various definitions purporting to differentiate emotions from other reactions fail uniformly to provide it with a logical separate existence.

Max Meyer[70] has also emphasized the principle that the responses which we call emotions differ from other forms of

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[69] E. Duffy, Emotion: An Example of the Need for Reorientation in Psychology, *Psychological Review*, 41: 184–198, 1934. See also by the same author, The Measurement of Muscular Tension As a Technique for the Study of Emotional Tendencies, *American Journal of Psychology*, 44: 146–162, 1932.

[70] M. F. Meyer, The Whale among the Fishes—the Theory of Emotions, *Psychological Review*, 40: 292–300, 1933. Meyer's essentially organismic view is most aptly concurred with by Wheeler and Perkins in the following words:

"Emotion is not a special discrete kind of behavior. It is not something reaction in intensity or degree only. As he puts it, the essential physiological functions of overt behavior, *i.e.*, the skeletal muscle functions, vascular muscle functions, and the regulatory chemical action of the glands, are all present in both non-emotional and so-called "emotional" behavior; and since these differ only in degree of intensity who can tell where one shades into the other? To be explicit, "How red must a person be in his face before he is said to have lost the unemotional character? Why is he not slightly emotional while taking his afternoon nap? Is not some blood even then circulating through the skin? . . . Who can decree that such and such an intensity of glandular and neural function is an emotional state and that below that intensity level the glandular and neural functions are unemotional? In other words, why make a sharp distinction when none exists?"

Dispensing with the Emotion Concept.—Meyer believes that we should dispense with "emotion" as a psychological concept and confine ourselves to a systematic description (in biological terms) of all behavioral events without attempting to classify them as to categories. Dunlap[71] has aided and abetted this movement by suggesting that since emotions enjoy identity only in terms of the significance of stimulating situations as apprehended, it is futile to attempt to classify them as of one kind or another.

While there has been some opposition[72] to this effort to reduce so-called "emotions" to the level of ordinary reactions, which reactions have obviously always differed from them (emotions) in degree of intensity largely (and not always in that respect), the trend appears to be in the direction of this simplification of our conception of behavior classification. As the emotion concept, as indicative of a discrete behavoir component of personality, gives way to a more organismic view of response and as reactions are

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added to other activities. *It is an aspect of whatever the person is doing at the time, when, in the approach to a given goal, the tension is increased and maintained through intraorganic stimulation.*" "Emotive behavior is any intensional, intelligent behavior, *energized*" (R. H. Wheeler and F. T. Perkins, *Principles of Mental Development*, The Thomas Y. Crowell Company, 1932, p. 207).

[71] K. Dunlap, Are Emotions Teleological Constructs? *American Journal of Psychology*, 44: 572–576, 1932.

[72] D. A. Worcester, In Defense of the Whale—Emotion Is at Least a Term of Convenience, *Psychological Review*, 40: 478–480, 1933.

evaluated and labeled with reference to an *intensity gradient* or its equivalent, we may expect to see the day when behavior forms will be described more in terms of the actual physiological and psychological processes involved than in terms of compartmentalized categories (analogous to faculties) associated with a collection of mutually exclusive class names.

IV. THE PROCESS OF EMOTIONAL CONDITIONING

Having canvassed some of the implications of the emotion concept we are naturally led to inquire just how it may be related to the personality-building process. It is generally believed that the social-stimulus value of one's personality is relative to the effectiveness with which the so-called "emotional component" colors the life and provides a satisfactory "feeling" balance for behavior. On the negative side, emotion, as an intense and disrupting reaction, is usually thought of as detracting from the effectiveness of social adjustments.

Conditioning a Substitute for the Dogma of Inheritance.—Whether a given individual is able to achieve a desirable emotional balance and the extent to which he is characterized either by poise or by irrational fears and phobias have been traditionally regarded as factors resident in the genetic constitution, that is, potential in gene inheritance.

Of late years, this complacent dogma of inevitable biological determination of emotional characteristics, normal and abnormal, has been somewhat disturbed by reports from various foreign and domestic animal and child study laboratories. It is beginning to appear quite conclusively that many of the unfortunate personality-disturbing emotions of the fear type at least are actually built into the personality structure by the now famous method of conditioning—the shifting of responses from original and biologically satisfactory stimuli to substitute stimuli.

This conditioning process, which we shall endeavor to describe in subsequent pages, is said to be explanatory of a veritable galaxy of human fears, animosities, biases, preferences, beliefs, dogmas, and even of an appreciable share of an individual's verbal learnings. To the behaviorists, the conditioning process represents the very fountainhead of personality development; in fact, they would contend that personality is but an elaborate synthesis of specific conditionings, all of which go to make up the individual as an organic part of society.

The fact that the behaviorist regards all social responses as essentially conventionalized biophysical contractions and secretions achieved by way of the conditioning principle does not mean that the conditioning technique is the exclusive property of mechanistic psychology or that anyone utilizing its possibilities is necessarily a behaviorist. The most conventional psychologists have described it for years as a simple form of associative learning. The behaviorists have merely attempted to reduce it to a strictly physiological, nonmentalistic basis.

Nature of the Conditioned Response.—The simple but portentous form of learning called the *conditioned response* is defined by Rexroad,[73] a behaviorist, as "that in which a response comes to be evoked by a stimulus which was originally ineffective in eliciting it." That is to say that many significant responses both desirable and highly undesirable, may come to be associated causally with forms of stimulation which did not natively arouse them.

The implications for human weal or woe of this principle should be apparent. We can be afraid of many objects or situations which from a rational point of view are harmless, and we may come to dislike people who are merely associated with unhappy events. Thus the child learns to be fearful of water or of dogs because these were encountered simultaneously with natively terrifying stimuli, such as loss of support and loud sounds. And the significant point is that many of these learned fears and prejudices become so apparently nonmodifiable and are so automatic in their responses that they are taken by the uninitiated to be unquestionably inborn. In this way, we can see that much confusion has come about with reference to the origin of irrational and efficiency vitiating behavior tendencies, emotional and otherwise.

Pavlov's Famous Study of Dogs.—It is generally known that the conditioned-response principle grew out of the work of the eminent Russian physiologist, Pavlov.[74] This ingenious worker noticed very early in the course of his controlled studies of dogs

[73] C. N. Rexroad, *General Psychology for College Students*, The Macmillan Company, 1929, p. 148. Quoted by permission of the publisher.

[74] I. P. Pavlov, *Conditioned Reflexes*, Oxford University Press, 1928.

(carried on in soundproof laboratories) that whereas the flow of saliva in a dog's mouth would ordinarily start only when he was provided with the stimulus "food," the animal later began to salivate at the sight of the forthcoming food or even at hearing the approach of his keeper's footsteps. Following this lead, Pavlov worked out his long series of experiments which culminated in the establishment of the "conditioned stimulus" and "conditioned reflex" principles. His principal contribution was his finding that when two stimuli—the natively saliva evoking meat and the artificial situation "ringing of a bell"—were presented simultaneously for a series of presentations, the latter (conditioned stimulus) soon came to elicit the saliva-flowing response (conditioned reflex) which was originally associated only with the meat-securing situation (unconditioned stimulus).

Pavlov eventually found that the conditioning mechanisms which worked so well with salivary reflexes could be extended to many other glandular and visceral functions. The interested student who is willing to read Pavlov will learn that he was able to perform many startling feats with dogs, such, for example, as eliciting discriminatory responses between high and low musical sounds and causing delayed responses to substitute (conditioned) stimuli.

It is in this way that characteristic reactions become associated with various stimuli, with the result that complex integrations of conditioned responses are built up. Eventually, so the behaviorists say, the complete synthesis of these interrelated systems of integrations makes up the totality of organism character and responses which we commonly called personality. However, from any point of view we can see that conditioned responses go a long way toward explaining the presence of many of the anomalies of behavior observable in individuals, young and old.

Russian Experiments on Children.—Though the reports that have reached us have been somewhat fragmentary, being usually published in the Russian language, we have available considerable material touching on experiments on conditioning in children as worked out by pupils of Pavlov, that bids fair to amplify greatly our knowledge of child development. As early as 1907, Krasnogorski[75] began to apply Pavlov's conditioning technique to the study of humans. By feeding chocolate (an unconditioned stimulus) to blindfolded children simultaneously with the ringing of a bell (conditioned stimulus) he found that, after a few trials, the conditioned stimulus (bell ringing) came to elicit the mouth opening and swallowing movements originally associated only with the biologically satisfying chocolate stimulus. Thus this investigator learned that children as well as dogs may readily come to respond to shifted stimuli. He found as well that such results are relative to the intelligence of the children tested, the bright subjects responding more readily than their less gifted mates.

Krasnogorski[76] has secured other results that are very significant for personality development in children. Just as Pavlov had succeeded in conditioning his experimental dogs to discriminate between differences in pitch so this worker found that children, too, readily learn to respond, for example, to a metronome beat of 144 strokes per minute while declining to do so when the rate is but 92 strokes for the same length of time. And like Pavlov, he discovered that when the difference in beat rate is reduced to a certain minimum (in this case 144 vs. 132) the subject becomes very irritable and nervous, or refuses to respond and actually goes to sleep. The same excited response (or sleep) accrued when attempts were made to condition children to react after certain periods of delay; they did very well in delaying their responses to conditioned stimuli (bell ringing) for as high as several minutes, but when pressed beyond a certain point they broke down.

Incidentally, Krasnogorski believes he has found a valid method for early differentiation between stable and nervously unstable children. He noticed that the former were able to adjust readily to fluctuations of inhibition and irritation, but that in pathological cases such flexibility was not in evidence. Therefore, he concludes that the presence of intense conflicts between inclination to inhibition and to excitement are indicative of favorable soil for the genesis of nervous disorders. This point is obviously of great import to those students of personality who hope ultimately to be able to discover incipient neuroses before the stage of ready response to treatment has been passed.

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[75] Reported in A. G. Ivanov-Smolenski's On the Methods of Examining the Conditioned Food Reflexes in Children and in Mental Disorders, *Brain*, 50: 138–141, 1927.

[76] N. I. Krasnogorski, The Conditioned Reflexes and Children's Neuroses, *American Journal of Diseases of Children*, 30: 753–768, 1925.

Other significant Russian investigations deal with the problems of early differentiation of degrees of instability in children and with the earliest points on the age scale at which conditioned responses can be detected clearly. Ivanov-Smolenski[77] was able to distinguish among three groups of children as to powers of inhibition and relative instability. Shchelovanov[78] and his group were able to build up a true conditioned response concerned with rhythmic sucking movements made by three- and four-week-old infants while seated on the mother's lap and before being given the breast. This response was elicited from the babes even when sitting on the lap of a man whose face and voice were kept from sight and hearing, providing the same position on the lap was maintained.

Mateer's Work with American Children.—In America, the conditioning idea has been carried gradually to its natural fruition as the behaviorist's corner stone of personality building. It also has been utilized extensively by less mechanistically inclined psychologists who see in it possibilities for the early detection and remedy of incipient personality disturbances as well as for a system of simple learning.

Mateer[79] was one of the first in this country to emulate the method used by Krasnogorski. In an extensive investigation involving more than 50 children, ranging from ages one to seven years, she secured results which she regarded as comparable to the Russian findings. By making use of intelligence tests, this investigator was able to determine the facility with which children of various degrees of intellectual ability responded to conditioned stimuli. She learned in substance that when original and substitute stimuli are presented simultaneously, mentally deficient children frequently require two or three times as many repetitions for firm establishment of the associations as do normally intelligent children. Mateer also discovered that the permanency of a conditioned reaction varies decidedly with age, intelligence, and other minor factors (described in her book).

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[77] Ivanov-Smolenski, *op. cit.*

[78] Reported in M. W. Curti's *Child Psychology*, Longmans, Green & Company, 1930, pp. 142–143.

[79] F. Mateer, *Child Behavior*, Richard G. Badger, 1918.

Mateer's work, which was obviously of a pioneer nature, has been rather severely criticized by her contemporaries.[80] It is alleged to be characterized by meager samplings, unreliable statistical treatment, and doubtful interpretations. Yet this report has given impetus to scientific child study and has demonstrated the possibilities for personality development of the conditioning method of approach.

Watson's Objective Studies of Infant Behavior.—The objective experiments on emotional conditioning that have attracted the most widespread attention and that have provoked the greatest controversies are those carried out at Johns Hopkins by J. B. Watson and his associates. It will be remembered that it was Watson who encountered the opposition of the Shermans and others by insisting that his investigations proved conclusively the innate nature of three allegedly clearly differentiated original emotions in children, *i.e.*, love, fear, and rage.

Watson[81] has always argued that since new born infants display fear reactions to loud noises and forms of loss of support only, the galaxy of fears appearing in the life of the typical adult must have been ingrained through some process of environmental influence, *i.e.*, some form of learning. As he says, "We know that hundreds of children are afraid of the dark, we know that many women are afraid of snakes, mice and insects, and that emotions are attached to a person and to places and to general situations, such as the woods, the water. . . . How do such attachments grow up? How can objects which at first do not call out emotions come later to call them out and thus greatly increase the richness as well as the dangers of our emotional life?"

In an effort to answer this important question of the genesis of fears and other nonoriginal emotions, this investigator entered upon his now famous objective studies of child development. In the end, he concluded that all emotional responses of any intensity, other than the three alleged to be inborn, are built in, *i.e.*, home made, by the same conditioning process exemplified in

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[80] M. W. Curti, *op. cit.*, p. 138.

[81] J. B. Watson, *Behaviorism*, W. W. Norton & Company, Inc., 1930, p. 158.

Pavlov's experiments.[82] He says, for example, that whereas children do not originally fear dark rooms they soon come to do so when loud sounds caused by slamming doors occur simultaneously with the experience of being in a dark sleeping room. Again, fear of a thunder storm is not caused by the flashes of light, but rather by the natively frightening claps of thunder which soon come to be associated with the lightning and the storm in general. These are just common examples of the conditioned response in which behavior is called out by a stimulus other than the one to which it was originally causally attached.

Procedures in Emotional Conditioning.—In telling of his experiences in building up conditioned fears in the laboratory, Watson likes to relate the story of Albert B., an even-tempered, "good" baby of eleven months.[83] After determining by actual tests with various live animals, such as rabbits and white rats, that this child was not afraid of animals of the furry sort, the investigator set out to learn if he could condition the little fellow against one or all of these creatures by associating them as simultaneous stimuli with a loud noise as produced by striking a steel bar. Knowing as he did that the child's response to such a noise was one of fear as expressed by crying, throwing up of arms, and efforts to get away, Watson wondered if he could substitute a white rat for the loud noise thus making the animal a substitute (conditioned) fear object. Subsequently he struck the steel bar a heavy blow just as Albert reached for the rat. The child responded of course with the usual fear reaction. The next time this dual stimulation was presented the child reacted as before but now displaying increasing apprehension at the sight of the rat. A week later, three more joint presentations were given with the result that distinct signs of fear were exhibited by Albert when the rat alone was shown. A few more double stimulations and the child became quite permanently afraid of the animal. Furthermore, Watson found that the child's fear had spread to many other similar furry objects such as rabbits, dogs, fur coats, and even wool material.

[82] J. B. Watson, *Psychological Care of Infant and Child*, W. W. Norton & Company, Inc., 1928, pp. 48–56. See also, M. C. Jones, The Conditioning of Children's Emotions, in *A Handbook of Child Psychology*, C. Murchison, Ed., Clark University Press, 1931, Chap. 3.

[83] J. B. Watson and R. Rayner, Conditioned Emotional Reactions, *Journal of Experimental Psychology*, 3: 1–14, 1920.

From this description, it is evident how fear responses become effectively conditioned. Watson regards this experiment and similar ones as bona fide evidence that in the ordinary conduct of every day life many vague and irrational fears which have no basis in original nature will be picked up without our knowing their exact origin. To quote Schwesinger's[84] clear statement of the case, "A clap of thunder, a door banging, a scream coupled with the situation of the moment produces fear; later the situation, unaccompanied by the noise, is sufficient to set off the fear response. But because we are unaware of the original linkage, we are unable to explain the fear. We may not have noticed the concomitancy of the two stimuli, we may have been too young to formulate it in words, we may have forgotten the occurrence, but our nervous systems have registered it indelibly."

Conditioning as Personality Building.—Thus, if the behaviorists are to be believed, is personality fashioned for weal or for woe; and thus looms the possibility that, given suitable surroundings, the human engineer may shape a wondrous personality made to order, as it were.

In perusing the literature on behavioristic conceptions of the nature and meaning of emotional conditioning, we are brought face to face with the fact that this school of "thought" is in the end driving toward the formulation of a tangible plan of personality building.[85] To them the personality is the end product of all conditioned habit systems and should be thought of as amenable to control in its construction. And in order to emphasize the made-to-order possibilities in the emotional system within the total personality organization, Watson and others have elected to deny vigorously the traditional dogma of inevitable germinal inheritance of personality qualities.

This leaves the field of operations open not only for the early conditioning of favorable emotional dispositions, but for the possibility of later progressive changes in personality as made possible by changing environments—environments conducive to the breaking up of old habit systems.[86] In this sense, we can no longer think of undesirable emotional tendencies as being genetically passed on from father to son; rather, we wonder at just what point and under what conditions the dispositions in question were conditioned in the developing personality structure.

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[84] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, pp. 389–390. Quoted by permission of the publisher.

[85] J. B. Watson, *Behaviorism*, W. W. Norton & Company, Inc., 1930, Chap. 12.

[86] *Ibid.*, pp. 301–302.

The Process of Unconditioning.—In view of the fact that children are very likely, in connection with home, school, and play, to make accidental attachments between fear, anger, and love responses and various irrelevent stimuli in a way that is definitely disadvantageous to them, the important question arises as to whether such undesirable associations can be broken successfully. In other words, can behaviorists, or anyone else, remodel the emotionally non-symmetrical personality once it has fallen heir to an irrational fear by way of the conditioning route? This is a significant question of human adjustment, and any light that we can secure concerning it will certainly be welcomed.

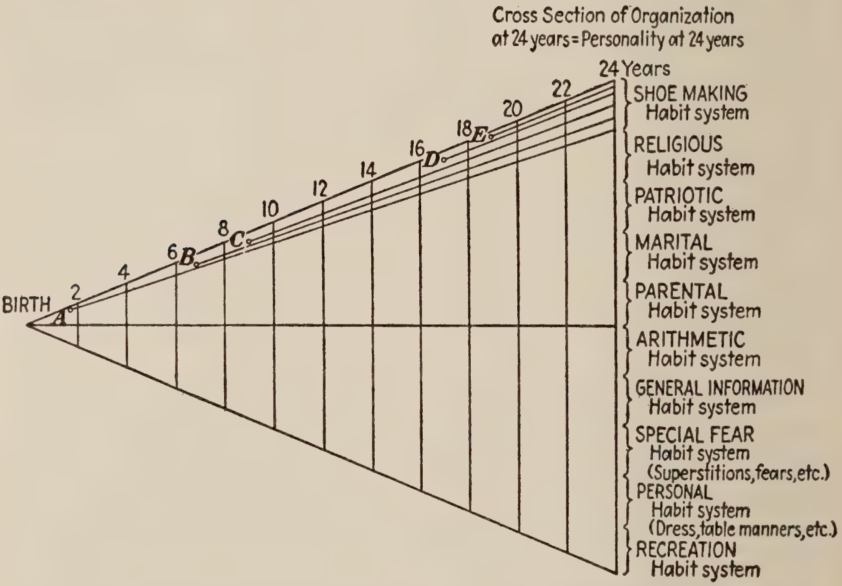
Cross Section of Organization
at 24 years = Personality at 24 years
24 Years
BIRTH
2
4
6
8
10
12
14
16
18
20
22
A
B
C
D
E
SHOE MAKING Habit system
RELIGIOUS Habit system
PATRIOTIC Habit system
MARITAL Habit system
PARENTAL Habit system
ARITHMETIC Habit system
GENERAL INFORMATION Habit system
SPECIAL FEAR Habit system (Superstitions, fears, etc.)
PERSONAL Habit system (Dress, table manners, etc.)
RECREATION Habit system

Fig. 10.—Rough diagram to illustrate what the behaviorist means by "personality" and to show how it develops. The central thought in the diagram is that personality is made up of dominant habit systems (only a few of these are shown in the 24-year-old cross section—there are really many hundreds). All the other habit systems—for instance, the religious, the patriotic, etc.—should have similar lines extending backward into the adolescence, youth and infancy of the individual in order to make them complete. (*From J. B. Watson, Behaviorism. W. W. Norton & Company,* 1930, *p.* 275.)

As usual, the behaviorists have a ready solution based upon their objective laboratory experiments. Failing in their attempts to reconstruct conditioned children through the conventional channels of reasoning with them, explaining the probable origin of their conditioned responses, and displaying the fearlessness of other children to the objects of their own fear, the Watsonian group finally hit upon the method which has come to be called "unconditioning." The technique involved perhaps is illustrated best in the work of Mary Cover Jones,[87] an associate of Watson.

Jones tells us an interesting story in connection with her success in unconditioning little Peter,[88] a child of nearly three years who had come to be terrified at the sight of a rabbit. Abandoning the idea of forcing the child to try to become accustomed to being near rabbits, she proceeded on the principle of associating the rabbit—as stimulus—with the strongly pleasurable reaction of eating. This recombining of a pleasurable with the feared stimulus was introduced gradually and judiciously by the plan of permitting Peter at first to see the rabbit at a distance within the room while he was eating (in a state of pleasant emotional tonus). Day after day the rabbit was brought nearer at eating time until the child became quite accustomed to its presence. At this point, a fearless child was brought in who, much to Peter's dismay, ran happily to the rabbit. The frightened Peter soon dried his tears and followed; and soon after he came to hold the animal on his lap and play with it in the usual unconditioned way.

Results almost identical with these have been reported by Watson[89] in connection with a child who was deathly afraid of goldfish. He too became unconditioned by a gradual series of approaches in which the bowl of goldfish was brought in closer and closer proximity to where he was happily engaged in eating his dinner.

Implications of Unconditioning for Personality.—Believing as he does that emotions are physiological processes concerned with muscle contractions and glandular secretions, Watson regards the unconditioning process as a case of *viscera retraining*, in which visceral experiences must of necessity play a prominent role if tangible results are to be secured. And in view of the fact that the unconditioning of a previously conditioned fear spreads to all objects of a nature similar to the fear object eliminated, this psychologist believes that he has opened up a portentous avenue of possibility for the reconstruction of aberrated personalities.

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[87] M. C. Jones, The Elimination of Children's Fears, *Journal of Experimental Psychology*, 7: 382–390, 1924.

[88] M. C. Jones, A Laboratory Study of Fear: The Case of Peter, *Pedagogical Seminary*, 31: 308–315, 1924. See also, Conditioning and Unconditioning Emotions in Infants, *Childhood Education*, 1: 317–322, 1925.

[89] J. B. Watson, Behaviorism: A Psychology Based on Reflexes, *Archives of Neurology and Psychiatry*, 15: 185–202, 1926.

It has been suggested as well that perhaps the emotions of anger and love, which can readily become attached to many different situations, may be dissociated by the same approach. At any rate, the principle involved explains why one intense fear experience often conditions a child against many similar stimulus objects and why the elimination of a single fear response may be effective in overcoming many others. In view of the vista of possibilities for personality modification entailed when environmental details are under control, it may be that Watson's dream of special institutions for the reshaping of psychological characteristics will ultimately be realized. This would be the natural goal of ardent environmentalists.

Criticisms of Watson's Work.—As might be expected, Watson's work has been rather severely criticized on several counts. First, his assumption that all fears, other than those evoked by loss of support and startling sounds, appearing in the life of a child must have been conditioned in by chance or obvious double stimulus events, is decidedly open to question. As previously mentioned (page 198), Gesell found evidence for the progressive *maturation* of fear responses in children of increasing chronological ages. Valentine[90] has also contended from his evidence that the absence of certain fears at a young age does not preclude their later appearance as maturation makes such development possible. Furthermore, he holds that there are "late appearing" fears which are in no sense the result of previous conditioning as Watson would claim. In a study of very young children, Washburn[91] noted a progressively increasing negativism, in the form of emotional retreating reactions toward strangers, and attributed the same to increasing powers of discrimination growing out of neural maturation.

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[90] C. W. Valentine, The Innate Basis of Fears, *Journal of Genetic Psychology*, 37: 394–420, 1930.

[91] R. W. Washburn, A Study of the Smiling and Laughing of Infants in the First Year of Life, *Genetic Psychology Monographs*, 6: 397–537, 1929.

H. E. Jones[92] has called into serious question Watson's assumption that young infant's emotions are reflections of genuine visceral experiences. In his experiments with the psychogalvanic reflex on infants, he found that their emotions are essentially superficial, being concerned largely with external somatic responses of crying, struggling, and the like. Little visceral support was in evidence until the youngsters became old enough to control their emotions to the extent of inhibiting the spontaneous crying response. Jones also suggests that the fleeting nature of most infant emotions is indicative of their surface nature.

Objection has also been made to Watson's almost exclusive use of the simple conditioning principle as the foundation of all learning and personality building. It seems to be another case of oversimplification in which the intricacies of human behavior, colossally complex as they are, are purported to be explicable in terms of one assumed premise,—and it, barrenly mechanistic at that. It may be an instance of erecting a great superstructure upon a foundation of partial truth. At any rate, Watson has been very general and somewhat inarticulate in his conditioning technique. He has followed the broad outlines of Pavlov's original procedures, but nowhere has he demonstrated a meticulous technique such as a close analysis of the Russian experiments indicates as being imperative to critical and conclusive results.[93] Specifications for securing such outcomes as proper conditions for true double-stimulation experiments will tend to ensure, have been offered by various psychologists, usually of behavioristic tendency.[94]

As for the principle of simultaneous stimulation, made famous in America by the Watsonian group, it was advanced and advocated as the fundamental law of habit formation as early as 1908, before the behaviorists, as we know them now, had got under way and before Max Meyer,[95] its advocate, had ever heard of Pavlov's theories. Meyer had been hesitant about emphasizing his simple theory of double stimulation, but when the Pavlovian "conditioned reflex" idea became so fashionable in psychological circles, he lost his fear of "not teaching psychology" and proceeded to expound his conviction that all habits, be they maze running, learning a vocabulary, memorizing poetry or prose, or skilled motor reactions, are ultimately reducible to the fundamental law of double stimulation. This law is the one that was destined to become the veritable cornerstone of behavioristic theories of personality construction.

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[92] H. E. JONES, The Galvanic Skin Reflex in Infancy, *Child Development*, 1: 106–110, 1930.

[93] CURTI, who has taken a great interest in the "conditioning" problem, even to the extent of visiting the Russian laboratories in Leningrad, gives it as her conviction that thus far "the American work on conditioning is illustrative rather than fundamental" (M. W. Curti, *op. cit.*, p. 145).

[94] See, as examples, C. N. Rexroad, *op. cit.*, pp. 149–155, and M. W. Curti, *op. cit.*, pp. 145–153.

[95] M. F. MEYER, Frequency, Duration and Recency vs. Double Stimulation, *Psychological Review*, 41: 177–183, 1934.

Behaviorists have been roundly censured by the Gestalt school and others of strong organismic persuasion for assuming that total personalities can be built piecemeal by a process of gradual synthesis of discrete habits into a whole which is presumably synonymous with the sum of all the integrated parts. This mechanistic conception of organization is said to do violence to the facts which argue for the uniqueness of the total as something far more fundamental and primary than an aggregate of conditioned reflexes. As the organismic people put it, character and personality must be considered in the total and with the understanding that all so-called "habits"—as parts—have meaning and property only in their mutual relations and as they "evolve in accordance with a plan"; also, that behavior is determined by a central intelligence rather than by the responses of specific conditioned reflexes to mechanically associated stimuli. To quote Wheeler and Perkins,[96] "*The personality is not a bundle of character traits* . . . , each arising from a separate source of influence, and taking its own independent course of development. The personality evolves, a single pattern of behavior, with each act depending upon every other *while it is emerging*." In addition to being a dynamic-energy system in which all aspects are organically related, the human personality is said to be a part of a larger dynamic whole, the "field of personalities," *i.e.*, society.[97] This view, which appears to recognize the vast complexity and flexibility of the human organism, seems to be diametrically opposed to the postulations of the Watson group.

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[96] R. H. WHEELER and F. T. PERKINS, *Principles of Mental Development*, The Thomas Y. Crowell Company, 1932, p. 25.

[97] R. H. WHEELER, *The Laws of Human Nature*, D. Appleton-Century Company, Inc., 1932, p. 212.

V. SUMMARY AND FURTHER APPLICATIONS TO PERSONALITY

In summarizing briefly some of the implications of the whole emotion concept, we should like to mention again that the many controversies and disagreements as to both its meaning and its utility are obviously grounded on the fact of its ambiguity. In reading the literature on emotions, one gets the impression that it represents a relatively independent category of response, but whether its uniqueness represents a quantitative or qualitative difference from either "feeling" or non-feeling experiences is not so clear. Several workers have suggested that perhaps we can clear the air on this point and incidentally stay close to the physiological facts if we define emotions as intensely stirred up states of total organism strain and then regard such a state of affairs as differing from nonemotional or so-called "feeling states" in degree of intensity only. In this way, we can avoid the multiplication of assumed behavior categories and get the vague emotion concept on a quantitative gradient scale of measurable behavior which will lend itself to objective observation and measurement by the use of the galvanometer, for example.[98] Thus, we can either give up the emotion appellation as a distinct concept, or we can give such a name to reactions characterized by certain arbitrarily agreed upon degrees of intensity.

The Utility of Emotional Experiences.—Instead of indulging in enthusiastic flights of rhetoric touching on the utility or disadvantages for human adjustment and happiness of emotions as such, we might better describe just what specific reactions, with special reference to the intensity of physiological processes and their relation to the circumstances of the stimulus, we have in mind when we make statements as to their value or disadvantage in life. Then instead of making blanket declarations (which are so frequently conflicting) as to whether emotions are assets or liabilities to the developing personality, we would describe each observed response pattern and in each case state its effects upon attempted adjustment. If this were done we venture to predict that most of the responses now called true emotions would turn out to be destructive to intelligent adaptation making. Fear and anger are known to be dissipating in their effects upon skill, be it verbal, artistic, or neuromuscular. At least we know that speakers, musicians, pugilists, and skilled performers of all kinds do their best to avoid the disintegrating effects of intense emotional upheavals.

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[98] For accounts of this method see W. E. Blatz, The Cardiac, Respiratory and Electrical Phenomena Involved in the Emotion of Fear, *Journal of Experimental Psychology*, 8: 109–132, 1925; and R. W. Husband, *Applied Psychology*, Harper & Brothers, 1934, pp. 564–567.

Nevertheless, some psychologists speak of emotions in general as valuable for stimulation to action, and to the organization of dominant powers. Even in their sthenic (intense) phase, Stratton[99] gives them credit for providing "an increased intellectual fertility," for putting novel ideas at the disposal of "vague impulses," and for enabling the individual to meet a crisis "with a more complete array of organization of his powers." This is no doubt true, but usually only in the case of certain definite so-called emotional experiences which we have been wont to call "love," "appreciation," or the like. Anger and hate may motivate a man to organize a shrewd campaign of retaliation, but we do not call his response a true emotion (as an intensely stirred-up state) after the termination of the first flush of his organic upheaval. After that, his state of stress is usually much further down the scale of quantitative intensity, thus not qualifying as a true emotion, at least in the usual sense of that word.

Feelings of well being, whether strong or weak, are obviously highly desirable for morale and for providing "color" and "zest" to life, but these are not, traditionally speaking, real emotions. Thus we can conclude that up to a certain quantitative point, some reactions are valuable for motivation and for personality adjustment, whereas, much beyond that position on the scale of violence they are usually shattering to efficiency. Even magnanimous states like "love," when intense, may render intellectual processes anything but judicious. Man needs poise and rational control if he is to combat the vicissitudes of his none too benign world of social and economic problems. Thus, extreme emotions should be avoided.

Emotions as Causes of Conflicts.—Society is always faced with the question of what to do about the sublimation of strong emotions. It is generally believed that Nature's provision for

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[99] G. M. Stratton, An Experience during Danger and the Wider Functions of Emotion, in *Problems of Personality*, C. M. Campbell, Ed., Harcourt, Brace & Company, 1925, pp. 61–62.

"resources of power" by way of intense emotional mechanisms was intended for a far more primitive society than ours. As Allport[100] well says, "The needs of civilized society are of another order: physical struggle and the violent emotions which accompany them are a menace rather than a benefit to modern man. The anger emotion cannot be used to support overt violence, because we must suppress this form of reaction in favor of a more socialized 'competition.'" Since man is endowed with such a strong and appropriate capacity for doing battle when frustrated, and in view of the fact that society does not permit an indiscriminate expression of such capricious desire, the question naturally arises as to how the human individual is to find release for his physiologically generated energy while at the same time meeting the endorsements of polite society.

It is believed by many that the problem of personality integrity hinges on this crucial issue. Sandiford[101] declares that individuals who bottle up their emotional desires too tightly tend to become psychopathic. Allport[102] believes that a too extended blocking of the tendency to anger release may lead to an introverted and moody personality, also that excessive frustration of the love motive may result in indulgence in autoeroticism, erotic day dreaming, and even neurotic dissociation (splitting) of personality. Raup[103] has expressed his conviction that modern conditions do not provide adequately for the relief of emotionally created tensions. And we know that the psychoanalysts have for many years accounted for the mounting toll of neurosis in terms of the alleged insurmountable gulf between erotic and "power" drives on the one hand and the cultured sanctions of social ideals on the other.

But it is probably true that the cruder desires can be satisfactorily irridated along socially acceptable lines. Desirable sublimation can no doubt be effected in the aesthetic fields of art, music, and literature.[104] There is much as well to commend the idea of draining off energy, sexual or otherwise, in the physically active realms of work, play, and athletics. Then there are innumerable hobbies, interests, social activities, and vocational ambitions that can compensate for many forms of dammed up "libido."

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[100] F. H. Allport, *op. cit.*, p. 97.

[101] P. Sandiford, *op. cit.*, p. 139.

[102] F. H. Allport, *op. cit.*, p. 98.

[103] R. B. Raup, *Complacency; The Foundation of Human Behavior*, The Macmillan Company, 1925, pp. 85–86.

[104] C. E. Ragsdale, *op. cit.*, pp. 129–134.

It would be very sentimental to assume that children and youth must be allowed full and free expression of their "driving" emotions in order to ensure symmetrical personality development characterized by freedom from neurotic imbalance. In our cooperative society, such indulgence probably contributes to the very emotional instability which it is intended to forestall. There are plenty of socially acceptable endeavors productive of energy release to care for the balanced satisfaction of individuals who have developed a wholesome disposition toward the necessary sanctions of a well-ordered social group. And a reasonable amount of thwarting of capricious desires can be made to contribute to happy adjustment, extreme child-self-expression enthusiasts to the contrary notwithstanding. Nevertheless, as Crile[105] has stated, since biologically all strong emotions involve a stupendous expenditure of energy, strong emotional reactions, even those directed along morally desirable lines, should be discouraged.

Importance for Childhood of the Conditioning Principle.—As for the mechanical conditioning of emotional responses whereby children pick up, without conscious effort, literally hundreds of fears, phobias, attachments, biases, preferences, dispositions, indoctrinations, and verbal responses, such a continuous process goes far toward explaining the ultimate nature of any given personality. In summarizing the import of this influence in the shaping of early child life, Curti[106] has presented four subprinciples which may well be mentioned here. (1) Conditioned reflexes are so readily established that they may even be built into insects,[107] not to mention infants. (2) Conditioned associations may occur without even awareness on the part of the child or other subject. Thus, contraction of the pupil of the eye of a subject may be conditioned to respond to a sound instead of a light without the subject's awareness.[108] (3) Under proper conditions, conditioned responses may become associated with any stimulus whatsoever. For example, two investigators were able to train dogs to respond positively to food when the right hind leg was rigidly extended, and to respond negatively when the leg was placed in any other position.[109] (4) Any response from any section of the body may become attached to a given substitute stimulus. This is illustrated by the finding reported in Pavlov's book in which responses of dogs to injections of morphine were later evoked by preliminary operations preparatory to such stimulation.[110]

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[105] C. W. Crile, *Man, An Adaptive Mechanism*, The Macmillan Company, 1916.

[106] M. W. Curti, *op. cit.*, pp. 133–137.

[107] J. E. Wodsedalek, Formation of Associations in the Man-fly, *Journal of Abnormal Behavior*, 2: 1–19, 1912.

[108] H. Cason, The Conditioned Pupillary Reaction, *Journal of Experimental Psychology*, 5: 108–146, 1922.

Conditioning Determining Personality.—The import of these considerations for child development in general and for personality determination in particular should be apparent. They suggest the extremely important point that many personal qualities and limitations ordinarily considered innate are explicable in terms of conditioned learning. Thus, we have an experientially acquired basis for a great variety of personality traits. This puts a different and certainly more optimistic light on the important problem of character and personality development. As previously mentioned, the conditioned-response principle does not necessarily explain all the ramifications of learning, but, sanely considered, it does point the way toward a program of constructive human engineering.

Questions for Stimulating Thought and Discussion

1. What fundamental fallacy is involved in regarding emotions as basic drives, *i.e.*, as causal agents? How do emotions, as stirred-up states of the organism, arise in the chain of cause and effect?
2. Why is it psychologically incorrect to contend that emotions as such tend to dominate the intellectual component in man? What confusion of concepts is involved in such a belief? What are the implications for an organismic view of personality?
3. On what grounds can one argue that full-fledged emotions as defined in this chapter are adjustive agents in the economy of life? Suggest a more defensible view and be prepared to meet arguments against your position.
4. Do you agree that Cannon's thalamic theory of emotions is unnecessarily mentalistic? Why? What would be the scientific value of getting the emotion concept on a strictly materialistic basis? Explain your position clearly.

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[109] E. S. May and J. A. Larson, Posture-sense Conduction Paths in the Spinal Cord, *American Journal of Physiology*, 50: 204–208, 1920.

[110] I. P. Pavlov, *op. cit.*, pp. 103–106.

5. Why is it that in spite of so much experimental evidence to the contrary some psychologists even continue to insist that there are present at birth a few clearly differentiated emotional patterns, as Watson would have it? Defend the organismic thesis that original responses are generalized and undifferentiated.
6. What psychological confusion might, in your judgment, be occasioned by discontinuing the emotion concept as a separate category or component in personality? Could we describe sentimental and appreciation responses if emotive and nonemotive behavior were thought of as differing in degree of intensity only? How?
7. What is the practical advantage of understanding the details of Watson's experiments in conditioning children if no laboratory facilities are ordinarily available? Isn't it true that most conditioned responses are picked up unnoticed in the flow of everyday experience? What can be done about this?
8. Explain how the behaviorists might hope to formulate a tangible plan of personality building in terms of the conditioning and unconditioning principles alone. What would be the objections to such a proposition?
9. How would Gestalt psychologists explain the evolution of personality from the original "non-descript" organism? In what respects would their views differ from that of the behaviorists? Why would they object to thinking of personality as an elaborate synthesis of conditionings?
10. What evidence can you advance indicating that the suppression of emotions is likely to cause serious personal conflicts? Would it be better to encourage suppressed individuals to give vent to their tensions regardless of competing social endorsements? Offer an answer that would be satisfactory to conservative people.
11. Defend the view that a free expression of pent-up emotions on the part of children may contribute to the very emotional instability which it is intended to forestall. By way of what psychological mechanisms could this unfortunate state of affairs come about?
12. In what way can the material marshaled in this chapter be said to have contributed toward an optimistic view of the possibilities of personality improvement? Has it opened up avenues for the possible acquisition of desirable personality traits? Explain.

Recommended Readings

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CHAPTER VII

THE NATURE AND DEVELOPMENT OF PERSONALITY TRAITS

The Problems of Trait Psychology.—When we come to making a parsimonious study of the nature of human traits, so called, we are approaching the very citadel of the problem of personality structure. To the average person, personality usually means nothing more or less than an aggregate or summation of discrete and mutually exclusive physical, emotional, ethical, and intellectual traits. That these traits are anything but unitary, static, and essentially innate entities determinative of personality has hardly been doubted. But now that we have come to the place in psychology where all neat classifications of alleged behavior categories, be they instincts, emotions, mental faculties, or personality traits, are being subjected to the searching light of objective investigation, traits, as fixed units of personality, are themselves in for a good overhauling.

In this chapter we shall attempt, in the light of present knowledge, a somewhat analytical study of the true nature of traits, how they emerge in childhood, and how they become inextricably and functionally interrelated in the welter of personality. We shall endeavor to show that personality, far from being a quantitative trait summation, comparable to the I.Q., is essentially a *balance* among a veritable galaxy of conflicting behavior tendencies. And in considering the genesis of traits (tentatively defined as more or less loosely organized systems of tendencies to react in characteristic ways) we should like to invite the reader to be sensitive with us to the importance in early life of such influences as emotional conditioning, parental patterns and attitudes, personal conflicts, and excessive frustration or indulgence of life needs, all of which may militate significantly for or against the development of socially desirable dispositions (traits).

In short, we must all guard against the apparently strong tendency to regard traits as unitary blocks in personality and as being potential or inevitable in gene inheritance. Such a palpable oversimplification of a really involved problem is hardly worthy of individuals who make any claim to a dispassionate search for ultimate knowledge. Let us then, in our quest for the true nature of trait organization, set aside comfortable a priori beliefs and be willing to take cognizance of all factors and influences likely to be germane to the fashioning of persistent behavior traits as well as to an explanation of their relatively specific nature.

I. THE GENESIS OF PERSONALITY TRAITS

Before entering upon a technical discussion of the nature of personality traits as indicated by recent experimentation and progressive psychological theory, we have deemed it advisable to present some evidence touching upon the origin of childish tendencies, the traits of popular parlance. With this material before us we should be in a better position to appreciate the nature and complexity of the trait controversy as it now obtains.

How Traits Emerge in Infants.—It is well to remind ourselves at the very outset that we cannot consistently hold to the view that a child's personality is comprehended in the acquisition of a collection of discrete nonamalgamated responses, such, for example, as fear, timidity, obedience, loyalty, or honesty. As the organismic conception of growth so clearly indicates,[1] personality is primary, it has reference to the original undifferentiated psychological life of the infant out of which all behavior patterns emerge as expansions and differentiations of the basic ground pattern, the "nondescript" but, nevertheless, unitary personality.

Since the psychological organism is obviously subject to the laws of growth and in view of the fact that growth directions are powerfully influenced by environmental pressures, it follows that traits, any way they are defined, are largely products of the social medium, *i.e.*, of education. This is the optimistic view and one fraught with almost staggering possibilities, but it can, nevertheless, be substantiated to a very satisfying extent. It means, in substance, that while the nature of original organic equipment may have considerable to do with the trend of a child's temperament, by far the more important factors determinative of personality reside in the social realm, the field of responses to people and social demands.

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[1] R. H. Wheeler and F. T. Perkins, *Principles of Mental Development*, The Thomas Y. Crowell Company, 1932, p. 217.

Thus, as Wheeler and Perkins[2] write, "The character of the stimulus-patterns that surround the infant is of profound importance for the development of personality." The nature of the child's first behavior differentiations are determined by the manner in which he is handled by his people. If he is overindulged and fondled whenever he cries, he tends at once to become expectant of such organic satisfaction and may develop considerable obstinancy if denied its realization upon demand. Again, too much rough handling, coupled with excessive noise and confusion, may result in a state of hypertension well calculated to affect digestion and sleep, with the ultimate result reflected in personality characteristics.

In this way, the infant may develop personality peculiarities of one kind or another in the first days and weeks of life. If we add to these transformations the conditioned responses described in our previous chapter we have at least a partial explanation for the popular belief in the innateness of practically all behavior forms observed in infants. *The layman naïvely concludes that, because certain tendencies appear in the first weeks of life, they are biologically inherited.* Little do most people realize how quickly infants become modified and how readily they reflect personality peculiarities characteristic of individuals in their stimulus range.

Nevertheless, it appears almost incontroversial that such portentous tendencies as gentleness or cruelty, cooperativeness or stubbornness, stability or nervousness are often passed on from parents to offspring as a *social* heritage. If this line of interpretation is sound, we have at least one key to the genesis of personality traits. They emerge in the pliable psychological life of the infant as a causal result of the stimulus patterns impinged upon him by his elders.

Experimental Evidence for the Genesis of Traits.—Tangible evidence for the position just advanced is not hard to find. Under the direction of Furfey[3] two graduate students set out to settle, if possible, the question of the permanency of original dispositions in infants. They had been told, of course, that lusty crying in newborn infants was indicative of a tempestuous disposition, also that original quiet behavior was a sure sign of an inherited sweet disposition. They proceeded nevertheless to secure ratings for crying, irritability, and quietness (also other traits) for infants of only a few hours and to compare the same with the ratings of these youngsters when eighteen to twenty-four months of age. Unfortunately for believers in inevitable, innate traits, there was no significant correspondence between the two ratings. Judging from this evidence, the original reactions of infants are not fixed patterns inherent in their constitutional make-up. Through the all important process of learning, with its attendant annoyances and satisfactions, the first organically determined units of reaction soon become altered in favor of pleasure-seeking responses.

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[2] *Ibid.*, pp. 218–221.

[3] M. Bonham and M. K. Sargeant, A Study of the Development of Personality Traits in Infants Eighteen to Twenty-four Months of Age, Master of Arts' Thesis, Catholic University of America, 1928.

At the Iowa Child Study Laboratory, Marston[4] investigated the origin of what are known as introvertive and extrovertive traits (to be explained in more detail later in this chapter). Owing to the rather dogmatic writings of Jung,[5] the author of these alleged personality types, they have been regarded as decidedly innate. Marston found that the sensitive, reticent, and self-conscious tendencies associated with introversion, as well as the free, sociable, and optimistic characteristics of extroversion are often clearly in evidence in children by the first five years of life. His evidence, secured from objective behavior tests, such as persistency in attempting to open an impossible puzzle box, suggests the *gradual causal shaping* of the trends in question, but does not of course prove the case against heredity. Others have found well established tendencies of a comparable nature at a much earlier age.[6]

Another form of behavior differentiation not ordinarily associated with the original "nondescript" infant personality, but which makes its appearance under certain stimulating conditions, is the negativistic or obstinancy attitude studied by Reynolds.[7] It appears from the evidence available that the obstinate attitude develops most readily among young children when they are consistently ignored and when their drive for freedom of activity is excessively frustrated by too frequent denial of cherished forms of play. It has been suggested as well that the negativistic trait may eventuate from a deep sense of inferiority from which the child attempts to escape by assuming an attitude of dominance. At any rate the negativistic tendency appears to be amenable to control and may be regarded as illustrative of the genesis of personality characteristics formerly erroneously classified under the inheritance rubric.

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[4] L. R. Marston, The Emotions of Young Children, An Experimental Study in Introversion and Extroversion, *University of Iowa Studies in Child Welfare*, vol. 3, 1925, pp. 7–99.

[5] C. G. Jung, *Collected Papers on Analytical Psychology*, Baillière, Tindall & Cox (London), 1917.

[6] See H. T. Woolley, Personality Studies of Three-year-olds, *Journal of Experimental Psychology*, 5: 381–391, 1922. Also C. Bühler, Die Ersten sozialen Werhaltiengs-weisen des Kindes, *Social und. Psy. Stud. über das Ersten Lebensjahr*, pp. 1–102.

A study of childish jealousy has further illustrated the early appearance of significant personality trends. In this connection, Sewell[8] observed the behavior of a sampling of seventy children under conditions associated with the introduction into the family of a new member. Responses to this event were varied, but on the side of jealousy included overt attacks on the newborn infant, efforts to ignore its presence, and by actual denials of its possession. In some instances, the arrival of the new sibling resulted in decidedly observable personality changes in the supplanted elder child. These frequently took the form of an increased timidity and shyness, an accentuated tendency toward daydreaming, and further development of negativistic attitudes.

The investigator found further that these unfortunate attitudes, which, incidentally, tend to appear most noticeably between the ages of eighteen and forty-two months, have an almost inevitable tendency to spread to other persons and situations. It is believed that the feeling of jealousy, which is obviously a reflection of the deeper feeling of *insecurity*, results from the child's sense of loss of parental preferment. Thus parents who inadvertently develop an excessive feeling of overdependence in their offspring contribute to their later jealousy and hatreds without being conscious of the presence of conditions conducive to such an outcome. Thus, again, we witness the genesis of traits destined to play a significant role in the personality of the unsuspecting child.

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[7] N. M. Reynolds, Negativism of Preschool Children, *Teacher's College Contributions to Education*, no. 299, 1928.

[8] M. Sewell, Some Causes of Jealousy in Young Children, *Smith College Studies in Social Work*, vol. 1, 1930, pp. 6–22.

The Prevention of Undesirable Trends.—The considerations just expressed suggest strongly the importance of early detection of incipient personality disturbances. If marked behavior tendencies of a highly undesirable nature can so readily arise in the course of a young child's capricious search for gratifying responses from others and if it is true that such attitudes tend often to persist throughout part or all of life, it stands to reason that we have in our possession one key to the general problem of personality building.[9] We say *general* since it must be admitted that the problem of the prediction and generation of specific detailed social attitudes is still to quite an extent beyond our ken.

Nevertheless, as we are so often reminded, we now have at hand sufficient knowledge touching on the social heritage nature of trait origin to make possible a far greater degree of behavior control than it is usually our privilege to witness. Judging from the testimony of extant studies we have it in our power to build into young personalities not only conditioned fears, prejudices, and preferences, but an array as well of socially significant behavior traits exemplified by those discussed in the above investigations.

The importance of early prevention has been attested to by Briggs[10] in connection with his discussion of the significance of early ingrained emotionalized attitudes. He strikes a dominant note when he says, "An attitude may persist long after the original causes have been modified, intellectually denied, or completely forgotten," also that an attitude may persist under such circumstances "with an emotional concomitant increased far beyond what the intelligent cause would warrant." Witness for example, the infantile but persistent dislike for foreigners, the naïve fear of haunted houses, or the smoldering resentment registered against all forms of restraint so characteristic of certain individuals.

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[9] That this view of personality building is not accepted by eugenisists and ardent type advocates is no secret. Being essentially the position of euthenisists it does not meet the mind even of some psychiatrists. See, for instance, C. C. Fry and H. W. Haggard, *The Anatomy of Personality*, Harper & Brothers, 1936, Chap. 1.

[10] T. H. Briggs, *Secondary Education*, The Macmillan Company, 1933, pp. 377–379. Quoted by permission of the publisher.

Germane and Germane[11] have much to say about the lasting effects of "infantile carry-overs," which faults are credited with the frequent production of adult failure and unhappiness. As some of the episodes cited by them suggest, this relationship may oftimes be true, but in this case the causal connections assumed are frequently so sweeping as to cast doubt on the likelihood of their being entirely valid. As Symonds[12] has pointed out, it behooves us to guard against the tendency to relate temporally separated behavioral events as bona fide cause and effect sequences.

In many cases, ultimate unhappiness may be due to a tangled variety of unanalyzable factors and may have little or no connection with antecedent experiences arbitrarily declared responsible for its appearance. However, we can certainly follow those writers when they suggest that "*When the habits that go to make a life receive the emphasis that is now placed upon those intellectual and vocational habits that go to make a living, we may expect a happier, worthier, and more successful epoch in human history*" (page 39).

With these considerations, touching upon the social etiology of so-called "personality traits," before us, we are naturally constrained to turn next to a study of the psychological nature and organization of these units of behavior. We propose to throw such light as may be available upon the important question of whether traits are unitary in nature, or whether they are characterized by the much discussed "specificity."

II. THE SPECIFIC NATURE OF PERSONALITY TRAITS

The Problem of Trait Organization.—As indicated briefly in our introductory chapter the validity of one's conception of the nature of personality is decidedly contingent upon his antecedent conception of the internal organization of those well known components of personality commonly called "traits." The question arises whether they are unitary, static entities, characterized by fixity of behavior and amenability to quantitative measurement (pigeonhole classification), or whether perchance they are merely names for aggregates of more or less loosely organized specific responses elicited by varying situations and conventionally subsumed under behavioral areas indicated by certain trait names.

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[11] C. G. Germane and E. G. Germane, *Character Education*, Silver, Burdett & Company, 1929, Part II, Chaps. 3, 4. Copyright 1929. Quotation reprinted by permission of the authors and the publisher.

[12] P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1931, p. 499.

If we subscribe to the proposition that traits are fixed dimensional blocks in personality, we are right back in the fold of the innate, inheritance dogma with its suggestion of irrevocably predetermined behavior. If, on the other hand, we take our stand with the specific situational (specific situations calling out equally specific responses) doctrine, we brand ourselves as environmentalists and proceed to utilize stimulating conditions as our frame of reference. In the latter sense, the personality trait (honesty, tact, loyalty, etc.) is essentially a fluctuating response to social circumstances and should be thought of as a name for characteristic modes of behavior growing out of social relationships.[13]

As for quantitative conceptions of personality, Griffiths[14] makes the point that "traits are not *units* of personality, *measurable* by some fixed standard comparable to measures of height and weight. Traits are not measurable because they are not quantities." He goes on to say that, when we speak of people as possessing "very little tact" or a "great deal" of courage, we are obviously speaking in figurative terms. Schwesinger[15] further clarifies this issue when she reminds us that personality is essentially a *balance* among so-called "individual" traits; it is not an accumulation of qualities comparable to the quantitatively determined intelligence quotient. As she puts it, "When any . . . trait is thought of by name, as for example, 'modesty,' 'ambition,' 'self-control,' 'suggestibility,' one has in mind apparently only a *certain degree of expression or development of that trait.*"

In illustrating further the non "uni-dimensional" nature of traits, this writer makes the point that when the expression of a given trait becomes excessive it tends to lose its identity and to merge into a trait of another category. Thus, excessive "leadership" becomes "tyranny," and undue "suggestibility" shades into "submission."

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[13] J. H. Griffiths, *The Psychology of Human Behavior*, Farrar & Rinehart, Inc., 1935, p. 466. Copyright 1935. Quotation reprinted by permission of the publisher.

[14] *Ibid.*

[15] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, p. 96.

These introductory considerations should serve to make us wary of strict innate theories of unitary trait organization. They should not, however, blind us to the possibility that under appropriate conditions and with sufficient maturity a degree of trait consistency, suggestive of unitary organization, may ultimately be attained.

Specificity as Inconsistency of Behavior.—But the real issue concerning the nature of traits seems to hinge on the question of their consistency. If personality traits are unitary entities it follows that all responses falling within a trait realm, such as "self-confidence" or "generosity," for example, would hew to a consistent line of action quite regardless of the circumstances of stimulating situations. Theoretically, if an individual possessed the trait of sympathy he would be impelled, by inner mechanisms, as it were, to behave sympathetically on all occasions. Conversely, if the trait in question were absent in his personality make-up, he would be unable to be sympathetic under any circumstances.

Actually, we know that the configuration of a stimulating situation determines, to a great extent, the pattern of the response that will accrue. Dispositions to behave in characteristic ways, generated by the flow and effect of antecedent experiences, must be taken into account, especially with mature individuals, but trait behavior is apparently also a function of the situations encountered. It is practically an axiom of psychology that changes in the elements of a situation bring about changes in the associated response.

Thus psychological research has disclosed the fact that many traits, popularly regarded as unitary, are actually inconsistent even within themselves. A man may be lenient with his own children and decidedly exacting in his dealings with pupils or neighbor children. Again, an individual may be meticulously honest in his formal business relations, but quick to take advantage of a streetcar conductor who passes him by. And we have all heard of the paradoxical person who would not think of stealing a friend's money, but who would, under certain circumstances, run away with his wife.

Specificity and the Existence of Traits.—So it seems that behavior within a trait area does not cohere as a consistent mode of response in accordance with our conventional notion of classification; rather, it appears that reactions are to a considerable extent functions of specific stimuli and that they are relatively unpredictable in unusual situations. As G. B. Watson[16] has said, "Although the English language may have bound certain responses together into one name, the responses remain really separate, and the presence of one does not indicate the presence of another."

Furthermore, if it is true, as Folsom[17] declares, that traits (particularly moral traits) are "creations not of biology" but of "conventional ethics," it is conceivable that investigators "may be attempting to measure entities that exist only in name."[18] Symonds[19] recognized this fallacy long ago when he wrote, " . . . are we trying to measure something that actually exists? When I read over a list of traits such as intelligence, neatness, humor, beauty, refinement, sociability, likableness, snobbishness, conceit, vulgarity, I am wondering if there is any one thing that corresponds to these names. It smacks very much of 'faculties.' 'Whatever we may name exists,' is a tacit assumption that we too easily make." And Trow[20] has concluded, after administering a battery of ratings, that there is no such thing as a general trait of "confidence."

Evidence for the Doctrine of Specificity.—Tangible evidence touching on the nature of trait organization is strikingly in evidence in connection with experimental investigations of such alleged contrasted personality traits as introversion-extroversion and ascendance-submission. In studying the latter traits, the Allports[21] asked college students to indicate on check lists just what adjustments they would make to a large variety of life situations involving dominant or submissive behavior. They asked, for example, what they would do about returning recently purchased articles which they did not wish to keep, how they would behave in the presence of superior business associates, and whether they sought to meet important personages at social affairs. Since each question on the A-S test is diagnostic of either ascendance or submission (or neither) it was possible to give each student a total score based on the algebraic sum of his responses to the separate items.

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[16] G. B. WATSON, Character Tests of 1926, *Vocational Guidance Magazine*, 5: 301, 1927.

[17] J. K. FOLSOM, *Social Psychology*, Harper & Brothers, 1931, pp. 535–538. Reprinted by permission of the publisher.

[18] P. A. WITTY and H. C. LEHMAN, The So-called "General Character Test," *Psychological Review*, 34:405, 1927.

[19] P. M. SYMONDS, The Present Status of Character Measurement, *Journal of Educational Psychology*, 15: 491, 1924.

[20] W. C. TROW, The Psychology of Confidence, *Archives of Psychology*, no. 67, 1923.

[21] G. W. ALLPORT and F. H. ALLPORT, *A-S Reaction Study*, Houghton

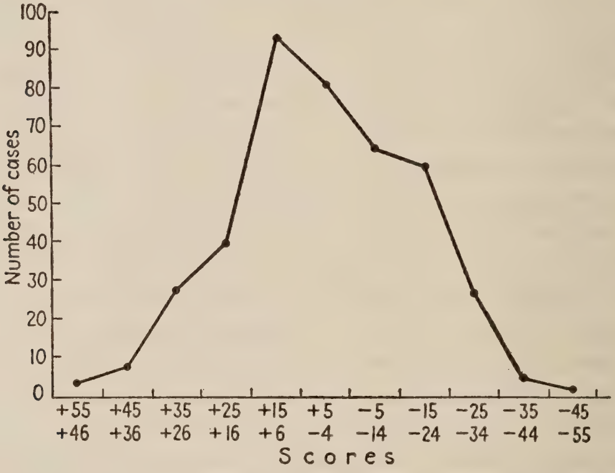

FIG. 11.—Distribution of ascendance-submission scores of 400 college men. Base line represents scores grouped into intervals of ten. (*From G. W. Allport, A Test for Ascendance-Submission, Journal of Abnormal and Social Psychology,* 23: 129, 1928.)

If the traits of ascendance and submission are independent inherited entities either possessed or not possessed by individual students, we would expect to get a bimodal curve when the scores were plotted. If, on the contrary, specific dominant or submissive reactions are attached to specific life situations, we might logically expect that most individuals would receive scores intermediate between the extremes and that others would shade off on each side toward the extremes in the usual "normal curve of probability" fashion.

Mifflin Company, 1928. See also, G. W. Allport, A Test for Ascendance-submission, *Journal of Abnormal and Social Psychology*, 23: 118–136, 1928.

Figure 11 shows that a distribution of the scores of 400 college men actually took this form. Very few of the men were markedly ascendant or decidedly submissive; almost all of them responded in a way that does not justify the assumption of unified traits. The majority tended to fluctuate from situation to situation, being dominant in some and submissive in others. Assuming the trustworthiness of the trait test in question [the Allports give reliability coefficients ranging from .73 to .78 (corrected) and validity coefficients of from .459 to .63] we have little ground to stand on in arguing for the consistent unitary nature of such personality traits as ascendance and submission. We could conclude with Curti[22] that traits are, rather, "more or less loosely organized systems of habits and attitudes which have been developed in the process of adjustment to the special and varying conditions . . . of life."

In one of his more recent writings, Symonds[23] attempts to disclose the fallacy of *trait* psychology by recourse to the following line of logic which is evidently based on investigations of the above nature: "Do we 'traitify' human experience by our methods of measurement? Do we assume from a method of measurement whereby we ask a number of questions and then proceed to total the answers so as to yield a total score that there is something in human nature that corresponds to this score? . . . It is easy to fall into the trap of first positing a trait, such as persistence or dependability, analyzing the trait into a number of specific situations in which it might manifest itself, framing these in question form, and finally computing a score on the basis of answers which indicate the presence of the trait. . . . This should put every investigator on his guard against creating psychological fiction by the very names which he assigns to his tests."

In harmony with this analysis, various investigators have found evidence for the fictitious nature of underlying traits. Brown,[24] in studying suggestibility, and Filter,[25] in investigating self-assurance, both found such a spread of individual responses as to obviate the idea of general traits. Incidentally, they came to the important conclusion, which has also been voiced by Witty and Lehman,[26] that no one test, designed to focus on one or a few specific situations, could serve adequately as a measure of the presence or absence of a trait (or of character or personality as a whole).

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[22] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, p. 468.

[23] P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1932, pp. 21–22.

[24] W. Brown, Individual and Sex Differences in Suggestibility, *University of California Publications in Psychology*, 2: 291–430, 1916.

[25] R. O. Filter, An Experimental Study of Character Traits, *Journal of Applied Psychology*, 5: 297–317, 1921.

Evidence from the Hartshorne and May Investigation.—In their elaborate study of the subtle interrelationships obtaining between overt behavior, on the one hand, and knowledge, opinion, and attitude, on the other, Hartshorne and May[27] arrived at some very significant conclusions touching on the nature of character traits. Since the first and most interesting part of their investigation was concerned with the nature of deceitful behavior in children and youth, we shall draw some of our conclusions from it. In choosing the objective measurement[28] approach to their problem these investigators committed themselves to the assumption that the amount and character of deception are functions of the situations in which they occur. This is the environmentalists view and the one which lends itself most naturally to a demonstration of the validity of the doctrine of specificity of behavior.

According to Hartshorne and May, deception is a symptom of social friction; it signifies a conflict between desires and the prohibitions of custom. The child comes into the world possessed of needs and desires of various sorts. Any expression of behavior consonant with the realization of these desires is often, at least in its primitive forms, incompatible with current social conventions. Thus a need arises for circumventing the social obstructions.

This is the dilemma which so often leads to surreptitious behavior. When a child deceives, he is not necessarily exhibiting an inherent tendency in that direction, and he is not in conflict with an inborn disposition to be honest. He is merely using his intelligence in solving a new problem; he is resolving the stress set up by resorting to adaptive behavior. The conflict which arises between social standards and children's performances is then a reflection of the struggle they experience in meeting the requirements of a complex environment. Their crude responses meet with rebuffs and penalties, so they are forced to resort to clandestine ways of satisfying their desires.

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[26] P. A. Witty and H. C. Lehman, *op. cit.*

[27] H. Hartshorne and M. A. May, *Studies in Deceit*, 1928: *Studies in Service and Self-control*, 1929; *Studies in the Organization of Character*, 1930; all by The Macmillan Company.

[28] The testing devices were based upon earlier techniques developed by P. F. Voelker (The Function of Ideals in Social Education, *Teachers College Contributions to Education*, no. 112, 1921), W. M. Cady (The Psychology and Pathology of Personality, *Journal of Delinquency*, vol. 7, 1922), and A. S. Raubenheimer (An Experimental Study of Some Behavior Traits of the Potentially Delinquent Boy, *Psychological Monograph*, no. 159, 1925).

The True Nature of the Honesty Trait.—In spite of this rather obvious fundamental "drive" or "need" analysis, we are constantly confronted with interpretations resting on a "faculty" psychology basis even in the character field. Virtues are said to be unified traits. Honest men are said to possess an honesty faculty which they develop just as one would train a muscle. This view is vigorously refuted by Hartshorne and May who, on the basis of their experimental data, hasten to say that virtues of honesty are not psychological entities or sums of virtues; they are simply classifications of acts.

Man possesses no secret reservoir of honesty virtues which he may utilize in various situations; his character consists of the quality of the particular acts he performs. Honest and dishonest deeds are specialized; indeed, one may be meticulously honorable in dealing with his pastor, but take undue advantage in a business deal without compunction. This tendency was illustrated by Hartshorne and May's experimental children in doing the coordination tests. They cheated considerably more on the mazes than on the circles or squares. This variation was found also among the speed tests.

"It is significant that pupils who yield to opportunities to deceive do not do so in a wholesale way, but in a more specialized manner occasioned by the nature of the stimulating situations in which they are placed. Because a child copies answers from a key is no assurance that he will take money from a puzzle box or add more answers to a test after time is called. His cheating is not general, but stands in relation to specific situations and their implications for his ambitions and standards."[29]

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[29] L. P. Thorpe, Unpublished Digest of Hartshorne and May's *Studies in Deceit*, p. 17.

The authors[30] sum up their doctrine of the specificity of conduct thus: "We would not wish to quarrel over the use of a term and are quite ready to recognize the existence of some common factors which tend to make individuals differ from one another on any one test or on any group of tests. Our contention, however, is that this common factor is not an inner entity operating independently of the situations in which the individuals are placed, but is a function of the situation in the sense that an individual behaves similarly in different situations in proportion as these situations are alike, have been experienced as common occasions for honest or dishonest behavior, and are comprehended as opportunity for deception or honesty."

The Integration of Specific Behavior.—In justice to Hartshorne and May, it should be said that, although they emphasize the inconsistent and unpredictable nature of child responses, they do recognize the possibility and probability that with maturity and the recognition of social conventions and standards, individuals may gradually attain to an inner organization or integration of behavior that bids fair to approximate the idea of trait consistency. They make this clear in their volume *Studies in the Organization of Character.*[31]

Biologically, even the lower animals are capable of profiting by experience in the sense of being able to make like responses to like situations. They tend to develop a repertoire of such associations, each of which is a functionally independent unit, integrated only with the organism as a whole. But these units of response do not become amalgamated in such a way as to become reintegrated into new patterns of response capable of meeting the exigencies of new and novel situations. In the case of humans, with their greatly amplified sensitiveness to subtle aspects of situations, very elaborate adjustments to constantly changing conditions are made possible, especially when behavior becomes organized on logical grounds.

As these authors have shown, children tend to respond very much like animals to the "coarser and more utilitarian aspects of their environment." And, like the animals, they are consistent in their reactions to like situations. But, due to the absence of moral principles and logical systems of analysis, there is very little mixing of their systems of response. The child is unintegrated in the sense that he does not have resources for dealing with his environment as a whole. If, however, we leave out of account the requirements of moral and civic standards, he is integrated in the sense that he makes similar responses to similar situations and varies his responses when situations vary. His behavior is in harmony with the cardinal principle that when the configuration of a stimulus situation changes the behavior of the reacting organism changes concomitantly.

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[30] H. Hartshorne and M. A. May, *Studies in Deceit,* The Macmillan Company, 1928, p. 385. Quoted by permission of the publisher.

[31] H. Hartshorne and M. A. May, *Studies In the Organization of Character,* The Macmillan Company, 1930, pp. 356–359.

The trouble is that the child's responses are not organized around what we adults call principles, laws, and ideals. When they become attached to these coercive dispositions they naturally tend to follow lines laid down by moral considerations. Thus behavior may become relatively integrated and consistent, being dictated by logic and responsibility, not by an unsophisticated search for individual satisfaction of immediate desires.

In short, Hartshorne and May have said that only *children's* behavior is largely specific, they have not claimed that *adult* behavior is inevitably characterized by inconsistency and lack of integration. Furthermore, they have explained the fundamental axiom that the development of moral-trait consistency is a function of maturity and guided experience, that consistency may be attained gradually when behavior begins to be ordered with reference to socially desirable guiding principles.

The Theory of General "Unitary" Traits.—It would be a mistake to believe that practically all psychologists regard our extant "trait" data as being indicative of definite specificity of behavior in all *Homo sapiens.* There are many who decline to believe that responses are always inevitable functions of situational stimuli. They feel that there must be some innate underlying determinants responsible for the coherence of reactions within behavior as conventionally classified, *i.e.,* traits such as intelligence, sociability, and morality. In checking the behavior history or verbal intelligence responses of individuals, they see what appears to be considerable consistency within relatively independent and unique areas of personality.

Thus they are constrained to place some credence in the idea of *unitary* traits. They are well aware of the evidence secured and conclusions reached by Hartshorne and May, and other "specificity" exponents, but they disagree—and sometimes on statistical grounds—with their interpretations. Perhaps these individuals are actuated by a priori dispositions born of indoctrination, but it must be admitted that they can often give very good reasons for "the hope that lies within them."

Exponents of the General Trait Thesis.—G. W. Allport[32] has stood consistently for the theory of generalized traits. While recognizing the fact that personality traits can be only relatively independent of each other in a physiological unit like the human organism, he still insists that a trait may be regarded logically as a "*generalized* response unit that reflects personality." Allport believes that a trait enjoys a relatively unique existence and that it is "functionally independent" to a considerable extent of exciting stimuli.[33] Rather than attribute the quality of a response to a stimulating situation, he prefers to credit the same to "complex higher units of personality" working in conjunction with, but exercising "a directive effect upon the specific response."

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[32] G. W. Allport, What Is a Trait of Personality? *Journal of Abnormal and Social Psychology*, 25: 368–372, 1931. Compare with Allport's recent statement that "underlying the conduct of a mature person there are characteristic dispositions or traits." (G. W. Allport, *Personality, A Psychological Interpretation*, Henry Holt & Company, 1937, p. 339).

[33] G. W. Allport, Concepts of Trait and Personality, *Psychological Bulletin*, 24: 284–293, 1927.

In commenting upon the recent tendency of some American psychologists to be influenced by the *Gestalt* or *Ganzheit* organismic view of personality trait organization, Hartman quotes G. W. Allport's significant interpretation of the logic of the matter: "The methods of current research upon which the doctrine of specificity rests are quite unsuited to the discovery of fundamental consistencies within personality. Until adequate methods are devised for the study of the *complex* unities of personality, an exaggerated faith in specificity will prevail. Cleeton and Knight measure the length of noses but not the cast of countenance as a whole, Hull and Montgomery measure microscopically the width of pen-strokes but not the form-quality of the total script, Rich considers the hydrogen-ion concentration in saliva, but not the endocrine pattern or type, and Hartshorne and May deal with a psycho-social-ethical *mélange* called 'character' which gives little opportunity for the discovery of consistent *psychological* dispositions in personality.

"If it is objected that one cannot measure pattern, form quality, or style, the proper answer is so much the worse for measurement. It is still in these complexities that one must seek congruence and integration, and any two variables arbitrarily isolated from the total structure for purposes of correlation will result only in an illusion of specificity" (G. W. Hartman, *Gestalt Psychology*, Ronald Press Company, 1935, pp. 256–257).

This view is comparable to the one advanced by Roback,[34] the well-known advocate of character as an inner directive force. Roback advances the consistent but somewhat subjective thesis that an individual's conduct tends to be organized in favor of his personal set of *values*—the disposition to behave in characteristic ways which constitute the "center of gravity" of his personality. Roback may be right, but some students in this field are inclined to raise their eyebrows when they hear him say further that there is "an inborn urge to consistency which forces the individual to strive toward unification in his acts."

Gilliland,[35] who has given considerable thought to the problems of personality, agrees with Allport and others that there are ordinarily enough common factors running through an individual's conduct to warrant the postulation of unique traits. In fact, he has analyzed personality into five tentative major traits which he regards as fairly independent or mutually exclusive in function. These are (1) intelligence, (2) aggressiveness or forcefulness, (3) sociability, (4) personal appearance, and (5) morality. Gilliland says frankly, "I am not in sympathy with the opinion of Trow, May, and Hartshorne, who find no such traits as confidence or moral judgment and imply that behavior is always specific and that we can never infer what an individual will do in any social situation." He admits offering this statement in spite of awareness that such investigators as Guthrie[36] and Pintner[37] found little or no correlation among three different tests of introversion-extroversion and between two tests of sociability.

Statistical Evidence for Unique Traits.—Subsequent to a thorough survey of the literature on relationships between physique and intellect, Paterson[38] came to the rather definite

[34] A. A. Roback, *The Psychology of Character*, Harcourt, Brace & Company, 1927, Chaps. 25–28.

[35] A. R. Gilliland, Problems of Personality, *Journal of Abnormal and Social Psychology*, 23: 369–378, 1928.

[36] E. R. Guthrie, Measuring Introversion and Extroversion, *Journal of Abnormal and Social Psychology*, 22: 82–88, 1927.

[37] R. Pintner and C. C. Upshall, Some Results of Social Intelligence Tests, *School and Society*, 27: 367–370, 1928.

[38] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, p. 276.

conclusion that his findings support the theory of *unique* traits. He reports also that in the Minnesota Mechanical Ability investigation, "It was demonstrated that I.Q., Mechanical ability and Physical ability are unique, each with respect to the other." This conclusion grew out of the statistical fact of low intercorrelations between all three of these aspects of behavior.[39] This finding is obviously not very surprising in view of the broad scope and dissimilarity among these three components of the personality pattern.

In developing his Personality Inventory, Bernreuter[40] came to the conclusion that there are definite identifiable traits some of which enjoy considerable independence from their cotraits. In fact his blank represents an attempt to evaluate quantitatively four supposedly different personality traits; namely, introversion-extroversion, dominance-submission, neurotic tendency, and self-sufficiency. Bernreuter believes that the consistent choice of one type of answer as made by college men indicates the presence in personality of unique traits.

Lorge,[41] who has called attention to the high degree of community between various of Bernreuter's traits (*partial* correlations of .80 between neurotic tendency and introversion-extroversion, and .46 between self-sufficiency and dominance-submission), concludes that "The partial correlations, however, point the fact that the traits as measured by Bernreuter are not sufficiently independent of each other for the clinical psychologist to view the raw scores as discrete trait measurements." Lorge declares that while it would be fine for psychology if pure, quantitatively determined traits could be identified, nothing is gained by attempting to *create* them through the naïve procedure of assuming their presence, *i.e.*, bringing them into being by *fiat*.

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[39] D. G. Paterson, R. M. Elliott, L. D. Anderson, R. A. Toops, and E. Heidbreder, *Minnesota Mechanical Ability Tests*, University of Minnesota Press, 1930, Chaps. 2, 12.

[40] R. G. Bernreuter, Chance and Personality Inventory Scores, *Journal of Educational Psychology*, 26: 279–283, 1935. See also by the same author, The Theory and Construction of the Personality Inventory, *Journal of Social Psychology*, 4: 387–405, 1933.

[41] L. Lorge, Personality Traits by Fiat. I. The Analysis of the Total Trait Scores and Keys of the Bernreuter Personality Inventory, *Journal of Educational Psychology*, 26: 273–278, 1935.

Perhaps Lorge's ideal will eventuate from the statistical studies of such men as Spearman,[42] Vernon,[43] and Kelley,[44] each of whom is endeavoring to isolate distinct traits, the internal organization of which is consistent enough to cause their specific composites to "hang together" statistically.

Evidence for Unique Constellations of Traits.—In his factorial studies (using inter- and tetrachoric correlations) of the nature of trait constellations, Thurstone[45] (and Mrs. Thurstone) has been able to establish the identity of a number of such unities that are fairly distinct from one another—that is, that exhibit only small positive correlations. In the "mental" field, he has some evidence for the distinct nature of verbal ability, perceptual relations, and arithmetical ability. He has also been able to isolate unique constellations in the symptoms of psychosis, in the vocational interests of college students,[46] and in the social attitudes of university enrollees. Most interesting are the relationships among the variables in the radicalism trait as set forth in Fig. 12.

It will be noticed that attitudes favorable to evolutionary doctrines, birth control, easy divorce, and communism tend to cluster within the trait of radicalism as a center of gravity, also that these specific liberal subattitudes are positively correlated with intelligence. On the other hand, we find social conservatism associated with favorable attitudes toward church going, prohibition, observance of Sunday, and belief in a personal God. Incidentally, the less intelligent (test intelligence) students place their trust in these orthodox attitudes as well as in the ideal of patriotism. For an empirical observation point of view these clusterings are not surprising (except possibly for the intelligence relationship), but it should be noted that in this case they have been substantiated statistically.

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[42] C. Spearman, *The Abilities of Man*, The Macmillan Company, 1927.

[43] P. E. Vernon, Tests of Temperament and Personality, *British Journal of Psychology*, 20: 97–117, 1929.

[44] T. L. Kelly, *Crossroads in the Mind of Man*, Stanford University Press, 1928.

[45] L. L. Thurstone, The Vectors of Mind, *Psychological Review*, 41: 1–32, 1934. Of considerable importance in this connection is the finding of Guilford that introversion can be "broken down" statistically into several independent dimensions. Using the Thurstone centroid method of factor analysis Guilford found five factors, which he has tentatively identified as S or social introversion, E or emotional introversion, M or masculinity-femininity tendency, R or *rhathymia* (carefree tendency), and T or thinking introversion. Thus, this investigator corroborates the feeling of many psychologists that the broad, blanket concept of introversion should be refined and reduced to its more meaningful fundamental factors. (J. P. Guilford and R. B. Guilford, Personality Factors S, E, and M, and Their Measurement, *The Journal of Psychology*, 2: 109–127, 1936.)

[46] See also E. K. Strong, *Manual for Vocational Interest*, Stanford University Press, 1931.

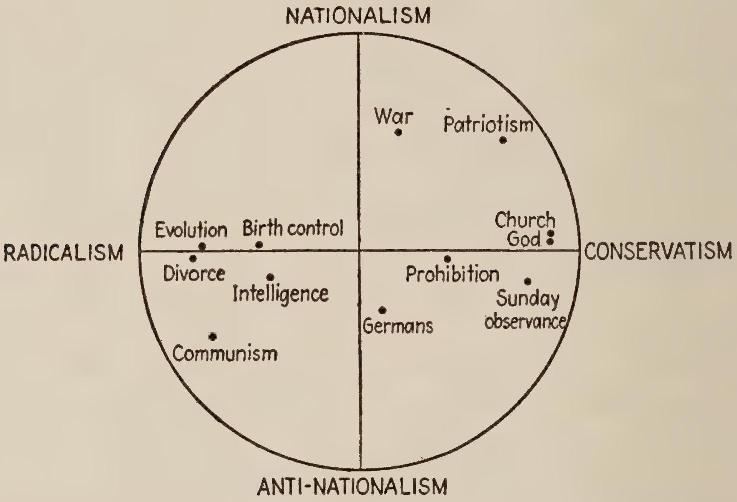

FIG. 12.—Factor study of radicalism showing loadings for each of twelve variables. (*From L. L. Thurstone, The Vectors of Mind, Psychological Review,* 41: 23, 1934.)

Compromise Conceptions of the Nature of Traits.—From what has been said thus far, it should not be inferred that exponents of specificity of behavior regard the circumstances of stimulating situations as the only determiners of conduct, or that believers in inner latent traits minimize entirely the efficacy for behavior of environmental pressures. Both groups must, in the nature of the case, recognize the combinations of interplay between these two influences, but they differ greatly as to the degree of influence which the logic of the evidence should attribute to one or the other.

Yet a few workers have taken occasion to point out the mutually interdependent relationship obtaining between them. They recognize the influences of specific situational stimuli as well as that of organism "sets" growing out of the effects of the experience continuum. From the standpoint of character psychology, Murphy[47] suggests the following: "It must be understood that there appears to be no 'all or none' answer to the question as to whether character is general or specific. Rather the question must be stated quantitatively: 'To what *extent* is character general; to what *extent* is it specific?' *Evidence suggests that it is predominantly specific, but to a somewhat smaller degree general.* Character is a function of two variables, of which the more important is the specific situation, but no prediction is meaningful unless the variable of existing habit organization is also given its place." It is our belief that, if we qualify this statement by applying it to children and youth and if we substitute the expression "trait action" for "character," we have a very satisfactory view of the status of the problem.

Hull[48] has also insisted that, in view of the fluctuating nature of behavior within a single personality, it is untenable to think of traits as unanalyzed and undifferentiated wholes. He believes that moral and character traits are neither entirely specialized nor wholly unitary, but that there is an observable tendency toward generalization—a tendency that is in many cases not very strong. Briggs's[49] position is similar: that attitudes (traits) are undeniably specific at first, but that there is a decided tendency for them to spread, to become generalized dispositions determinative of the direction of conduct. Woodworth[50] has emphasized the joint influence of stimulating situations (including the individual's knowledge of the group code) and the personal qualities or values held by the reacting individual as determiners of the consistency of conduct.

Factors Determinative of Specific Responses.—Perhaps the most thorough statement of both the obvious and the substrata variables that must be taken into account in explaining the specific details of complex reactions, is the one by Witty and Lehman.[51] This was made in connection with their controversy with Woodrow and Bemmels[52] over the nature of character organization and logical procedures for the measurement of its specific manifestations. As they put it, we must take into account (1) the strength of the stimulus or temptation, including (*a*) the individual's particular likes and dislikes, (*b*) his felt needs at the moment of temptation, (*c*) the supposed liability of being detected, and (*d*) the general social atmosphere that surrounds him; as well as (2) the condition of the subject, including (*a*) the strength of his resisting power, (*b*) his physiological and mental state at the moment of temptation and (*c*) his need at the time of the temptations occurrence.

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[47] G. Murphy and L. B. Murphy, *Experimental Social Psychology*, Harper & Brothers, 1931, p. 604. Reprinted by permission of the publishers.

[48] C. L. Hull, *Aptitude Testing*, World Book Company, 1928, p. 195.

[49] T. H. Briggs, *op. cit.*, p. 374.

[50] R. S. Woodworth, *Psychology*, 3d ed., Henry Holt & Company, 1934, p. 103.

[51] P. A. Witty and H. C. Lehman, *op. cit.*, p. 403.

This frame of reference, which favors the idea of specificity while at the same time recognizing the influence of the condition of the individual, would evidently fit very nicely into an analysis of the character of *moral* traits.

III. RÉSUMÉ OF THE NATURE OF TRAIT ORGANIZATION

In attempting to draw together the various ramifications of the trait organization problem, we should like to touch briefly upon at least the following points: (1) differentiation among the various "kinds" of traits, (2) the relative or biosocial nature of personality traits, (3) the nature of trait consistency, (4) the development of trait consistency, (5) individual differences in trait consistency, and (6) correlations obtaining among traits.

Differentiation among "Kinds" of Traits.—In writings concerned with the problems of personality, one encounters much discussion of the nature of traits but is ordinarily not advised as to just what brand of traits is under examination. It would appear that traits are "just traits" the world over. It may be that there is a difference in the internal organization of different kinds of traits or at least in the extent to which consistency may be developed within their confines. We know that personality emerges as an integrated whole from nondescript infant behavior by way of expansions and differentiations of response. And although these are rightfully thought of as constituting an inseparable integration, they are conventionally classified into supposedly irreducible elements (major traits) each of which is said to constitute a behavior area all its own.

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[52] H. Woodrow and V. Bemmels, Overstatement as a Test of General Character in Pre-School Children, *Journal of Educational Psychology*, 18: 239–247, 1927.

Thus when we speak of a trait and its nature we should make clear just what major or minor element of personality we have in mind. It will be remembered that Gilliland listed as major traits intelligence, aggressiveness, sociability, personal appearance, and morality. A more recent formulation by Fry and Haggard[53] is not greatly dissimilar (although Gilliland's conservative discussion of his list should not be compared with the more speculative deductions of the latter writers). They reduce personality to (1) the physique, (2) the driving force, (3) the intelligence, (4) the temperament, and (5) the ego.

Now it may be that *moral* traits, as analysed by Hartshorne and May, are somewhat different in internal organization and perhaps more amenable to the development of coherence around guiding principles than are the *social* traits of dominance-submission or introversion-extroversion as treated by the Allport brothers and Jung, respectively. And perhaps *intellectual* traits, so brilliantly analyzed by Binet and Terman, are more specific in nature than the *mechanical* traits studied by Paterson, Elliott, et al. At any rate we should be careful to make a distinction among these major elements reserving the possibility that they may differ in structural make-up and amenability to modification.

The Relative Nature of Personality Traits.—In our thinking about the evaluation of personality traits—of any variety and no matter how defined—we must always remember that in the nature of the case they do not and cannot enjoy any standard objective status. A man's personality qualities (traits) are always evaluated by another whose own personal sense of values constitutes the criterion of judgment.[54] Thus, judgments of the ratings accorded one individual's traits are relative to the subjective standards held by those issuing the judgments.

As an example, consistent and consecrated adherence to the doctrines and spirit of a given church would be heralded by its pastor as a trait of devoted loyalty, whereas an atheist would probably regard such servility as an instance of naïve simplicity. Again, extrovertive sociability may be rated as a coveted goal by one individual, but as a boresome trait to be avoided by another. In short, traits are biosocial constellations which can only be rated in terms of the values assigned them by the individual or individuals doing the ratings.

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[53] C. C. Fry and H. W. Haggard, *The Anatomy of Personality*, Harper & Brothers, 1936, p. 18.

[54] P. E. Vernon, The Biosocial Nature of the Personality Trait, *Psychological Review*, 40: 533–548, 1933.

The Nature of Trait Consistency.—Just a word about consistency of trait behavior. Basically speaking, consistency is in evidence when the individual responds in a like manner to like situations. Contrary to popular opinion, he is not inconsistent when he behaves differently in very different situations. Hartshorne and May[55] found that children tend to pick up one-for-one stereotyped responses to specific stimuli and that they are consistent in staying by these patterns. If the reaction was an honest one, it persisted as honest, if dishonest, so it tended to remain. From the child's point of view and from the angle of nonmoral adjustment making, such behavior is consistent. As Woodworth[56] says, "The individual may be consistent with himself even though he cheats at one time and not at another, or though he behaves in an extrovert manner at one time and in an introvert manner in a different situation."

The inconsistency creeps in when we begin to judge the child by external standards of which he may be only vaguely aware. Our moral codes brand his internal consistency as being for all practically social purposes inconsistent, *i.e.*, wrong or bad. Thus the child is forced gradually to act in widely different situations in detailed ways that square with the adult group code of morals and ethics.

Individual Differences in Consistency.—Hartshorne and May[57] found that children and youth differ considerably in the extent to which they have been able to achieve consistency of behavior as judged by virtuous group standards. They found as well that conduct conformity is associated with such factors as socioeconomic home status, standards of the child's companions, intellectual status, and the like. And as Symonds[58] points out, these investigators made the important discovery that children who are as a general rule (*i.e.*, usually) honest are also more consistently honest. On the contrary, the child who is usually dishonest is much more inconsistent, *i.e.*, his behavior is decidedly less predictable than that of his better organized classmate.

[55] H. Hartshorne and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, pp. 355–358.

[56] R. S. Woodworth, *op. cit.*, p. 103.

[57] H. Hartshorne and M. A. May, *op. cit.*, pp. 307–308.

[58] P. M. Symonds, *op. cit.*, pp. 564–565.

It is obviously of considerable significance to the business world to know that a man of high character is also likely to be one of *dependable* behavior, also that low character is characterized by a great deal of vacillation in conduct.

Correlations Obtaining among Traits.—It seems appropriate in this connection to comment on the old theory that the possession of fine qualities in one or more traits axiomatically implies a corresponding weakness in others. This is the theory of negative correlation or *compensation* among traits. According to its thesis, claims have been made, for example, "That a good memory stands opposed to good reasoning; that high musical talent is likely to go with unstable temperament; that scholarly minds are usually incased in frail and clumsy bodies; that strong bodies inherit weak wills; that great artists are prone to have inferior character."[59] Thus we have inherited such expressions as "beautiful but dumb," and "a strong back but a weak mind."

Actually, insofar as investigators have been able to measure desirable personality traits, they have found a decided tendency for favorable traits to be associated together in an individual. In his elaborate studies of genius, Terman[60] found positive (though sometimes very moderate) correlations among intellectual, social, moral, temperamental, and volitional traits. Less closely—though positively—related are physical, mechanical, musical, and artistic abilities and aptitudes. It may be said then that, far from being antagonistic to one another, desirable traits tend to be found together in the mesh of personality.

The Development of Trait Consistency.—In closing our discussion of the specific nature of personality traits, it may be well to illustrate as best we can by a few schematic diagrams the way in which these traits probably are and are not organized psychologically. But first, we shall reiterate our former statement that the differences between adherents of the "specificity" and "general" or unitary views may actually be more imagined than real. At least in the character trait field (as studied by Hartshorne and May), it is entirely likely that moral behavior is decidedly specialized in the case of immature children who are actuated principally by the temptations of the moment and by their natural individualistic tendency toward the satisfaction of organic and social pleasure goals.

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[59] A. I. Gates, *Psychology for Students of Education*, The Macmillan Company, 1930, p. 584. Quoted by permission of the publisher.

[60] L. M. Terman, *Genetic Studies of Genius*, vol. 1, *Mental and Physical Traits of One Thousand Gifted Children*, Stanford University Press, 1925.

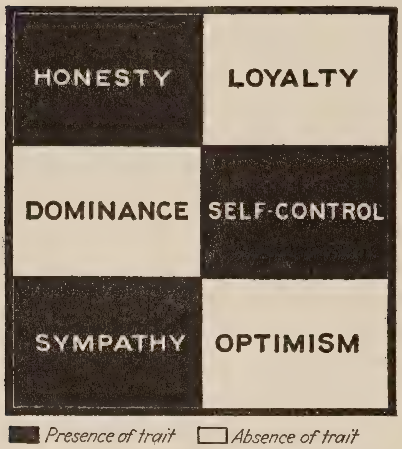


Fig. 13.—Sample traits as unified, consistent static blocks in personality.

Children are not sufficiently sophisticated morally to organize their responses around conventional adult mores. But as they grow older and become oriented by experience to the demands of social sanctions, their behavior, other things being reasonably equal, does gradually become more and more consolidated until many probably reach the place where their trait behavior does actually *approximate* the ideal of unitary trait consistency. Thus in the character realm at least degree of constancy in conduct may often be a function of chronological age coupled with social maturity.

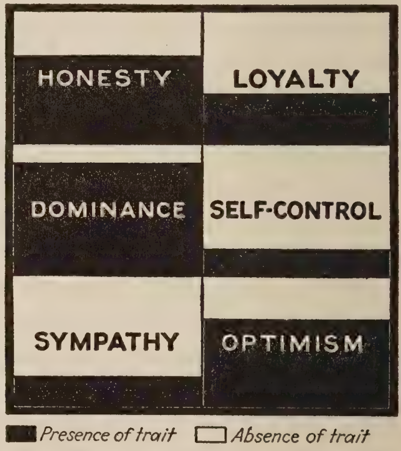


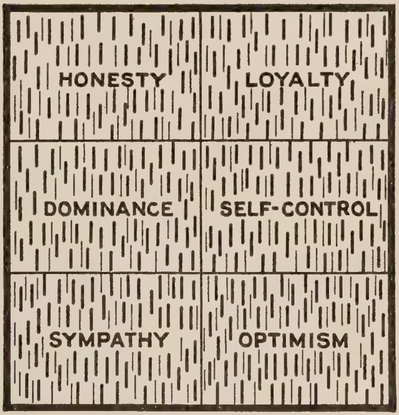
Fig. 14.—Sample traits as partially developed faculties or blocks in personality.

It must be remembered that Hartshorne and May's data and interpretations grew out of studies of children and youth, whereas critics of their conclusions are frequently arguing from the standpoint of *adult* behavior. Besides, Hartshorne and May[61] have expressly stated that moral conduct can and does become more and more consistent as laws, standards, and social ideals come to dominate behavior. Whether social traits, such as introversion-extroversion and those of an intellectual nature, work out in this manner is not so clear. Perhaps some of them become

[61] H. Hartshorne and M. A. May, *op. cit.*, pp. 357–359.

more differentiated with the years. Further investigation will no doubt throw light on this point.

In the end, then, we can say that personality is not an aggregate of unitary blocks called traits as pictured in Fig. 13, neither is it a collection of partially developed traits as indicated in Fig. 14. It might possibly be likened to an integrated group of traits (defined again as a more or less loosely organized set of specific dispositions to act in characteristic ways), each of which is characterized by an aggregate of both desirable and undesirable "specifics," all of which are interrelated in patterns too complex to be satisfactorally depicted in schematic diagrams. Figure 15 is suggestive. And as for the development of character, and possibly other traits of personality, Fig. 16 may possibly provide an idea of the growth of consistency. Complete consistency is, of course, never reached, but in many cases, especially where group morale is introduced, it may become quite highly developed. As a matter of fact, the Character Inquiry disclosed a steady decrease in cheating from grades five to eight in the case of "group X," a favored group enjoying good homes, good schools, adequate parks, playgrounds, camps, and the like. On the other hand, a semislum group, "group Z," showed a gradual decline in total honesty. At any rate, the trait idea, though fraught with much misunderstanding, is probably valuable enough to retain as a psychological concept when considered in the light of an analysis of its nature.



Heavy line (|) = Desirable reaction
Light line (|) = Undesirable reaction

FIG. 15.—Sample traits as more or less loosely organized specific dispositions to act in characteristic ways in various situations. "Traits" arranged in blocks for schematic purposes only.

IV. THE MODERN VIEW OF TRAIT DEVELOPMENT

When systematic trait action investigations first indicated the essential specificity of conduct in children, psychologists were very much at a loss to know what to do about the problem of developing ultimate behavior consistency—such consistency as squares with our conventional standards of character. If the child learns only the reactions he makes in given concrete situations and if no spread or transfer of conduct to other situations may be anticipated, how is behavior in general to be consolidated? In short, how can all-round virtuous living, such as we expect of wholesome citizens, be attained if every concrete situation involving righteous conduct has to be learned specifically as such? In view of these questions, some procedure had to be devised for insuring, as far as possible, generalized, morally consistent conduct in all situations involved, including those in connection with which the subject had enjoyed *no concrete experience.*

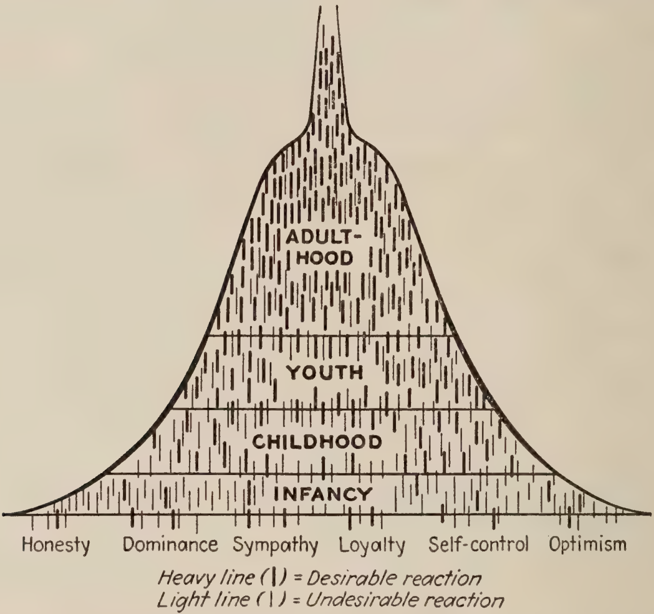

ADULT-
HOOD
YOUTH
CHILDHOOD
INFANCY
Honesty
Dominance
Sympathy
Loyalty
Self-control
Optimism
Heavy line (|) = Desirable reaction
Light line (|) = Undesirable reaction

Fig. 16.—The genetic development of trait consistency. Illustrating consolidation through the increasing tendency to be influenced by guiding principles, ideals, and laws.

Now that we have had time to think through the logic of this dilemma, the appropriate procedures seem fairly clear. At least, many careful students of personality think so. But it must be acknowledged that such knowledge as we have along this line pertains almost exclusively to the development of *character* traits.

We seem to know very little about the generation or modification of such social traits as are usually diagnosed in tests of neurotic tendency, self-sufficiency, social maladjustment, ascendence-submission, and the like.

Procedures in Consolidating Specific Traits.—It must be admitted that traditionally we have sought to coerce our children into rendering acceptable behavior through laying down rules and through verbal exhortations. We have preached to them in glowing terms about the virtues of honesty, tolerance, generosity, sympathy, etc. They have frequently responded to our flights of oral enthusiasm with an ardent renewal of purpose to exemplify these cardinal virtues in their workaday lives. But, as Charters[62] has indicated, these efforts are for the most part doomed to failure; they are, in fact, "pleasant failures." They cannot succeed because they are *general* and *abstract*, whereas behavior is *specific* and *concrete.*

Furthermore, these exhortations are usually not given at a time or in a place that can be definitely attached to a concrete situation in which the individual actually behaves. As Charters[63] has also said, "One does not act honestly in general; he performs a thousand specific acts of honesty. He tells the truth about the sharpened tool he ruined, about the dime he lost, or about the window that he broke in play." Thus we say that an individual becomes honest or tolerant by multiplying into the thousands specific acts in which honesty and tolerance are made natural and satisfying. He does not acquire these highly desirable traits through wishing for them, through hearing entrancing stories illustrating their exemplification, or through learning to repeat rules concerning them.

On this basis, it is apparent that the stimulating situation is the fundamental unit of trait action; it is the nucleus from which the earliest actions arise and around which consolidation of behavior must be woven. Children must be taught specific trait responses, one by one, in these concrete situations. Only as a child grows older and accumulates a long series of individual trait actions can he hope to begin to apply rationally analyzed principles of conduct. And, as psychologists well know, the appropriate specialized responses must be elicited by arranging situations in which it is natural, because of the presence of dominant motives (life needs), to do the right things (as interpreted by adults), and in which right reactions are made tangibly satisfying.[64]

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[62] W. W. Charters, *The Teaching of Ideals,* The Macmillan Company, 1927, pp. 105–106.

[63] *Ibid.* Quoted by permission of the publisher.

This principle axiomatically posits the need for a wholesome environment and for the presence of careful, intelligent supervision of practically all early infant experiences, *i.e.*, if we propose to make an effort to guarantee the integrity of these important trait nuclei.

Engineering the Development of the Trait of Sympathy.—Ragsdale[65] has illustrated the procedures involved in trait development by references to the trait of sympathy. According to him, the requisite for such training includes (1) the recognition by the child of numerous concrete situations in which sympathy behavior is appropriate and desirable, and (2) specific training in such *modes of action* as may properly be regarded as exemplifying sympathy. To begin with, we can select a situation in which another child has fallen and hurt his hand. Immediately, we show the child under instruction that here is an *occasion* which calls for certain *specific* actions, such as helping the injured child to get up, comforting him with kind words, fondling him, and going for help, all of which are appropriate under the circumstances and which typify the trait of sympathy. The developing child has thus functioned well in one concrete situation, having learned to *recognize* the situation and to produce a *specific set of responses* germane to the ideal of sympathy.

Having started the ball rolling, as it were, we next proceed to multiply situations in which similar concrete expressions of sympathy may be brought out. The successive incidents may involve troubles other than physical injury, *i.e.*, loss of a toy, breaking of a doll, etc., but in each case the child must be taught the exact kind of actions that will result in helpfulness to the sufferer. Eventually, when the child in question has successfully adapted himself to numerous sympathy-expressing situations, he comes to possess the relatively uniform style of behavior which we call the trait of sympathy. And so it goes for tolerance, loyalty, aggressiveness, generosity, industry, dependability, and the rest; all depend upon specific reactions made in a wide range of social contacts and under such conditions that the child learns to make acceptable and appropriate responses.

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[64] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, p. 472.

[65] C. E. Ragsdale, *Modern Psychologies and Education*, The Macmillan Company, 1932, pp. 346–352.

The Place of Generalizations in Trait Development.—Workers in fields of applied psychology have often made the statement that it would be discouraging if children were up against the problem of learning "countless" socially approved ways of responding to particular situations, or even if specific learnings could be counted upon to transfer to very similar situations only (doctrine of "identical elements"). Fortunately, the situation is not as hopeless as this. The much maligned *principles* and *precepts* of verbal exhortation days have been found to be vitally important in the generation of trait action consistency. Stated as mere abstractions they are said to be relatively impotent, but when applied to specific problems they become very influential.

To be exact, when a child has successfully encountered hundreds of concrete cases of being tolerent or honest, he normally begins to generalize his experience and to organize his behavior around what we call subjectively "ideals." And as these principles become crystallized into objective dispositions to act in consistent ways, *they in turn become influences for determining the direction of subsequent behavior.* As Charters[66] puts it, "For one who knows the Golden Rule, the control of specific situations involving its use is easier than for another who is unacquainted with the formulation." We could add, "and for one who is untrained in the legion of Golden Rule 'specifics.'"

The important process of rational analysis and subsequent generalization, by means of which specific conduct comes to cohere around leading principles or laws and by way of which behavior becomes intelligently integrated, are aided and abetted in their development if, in the course of routine experience, the varying situations encountered by the child are analyzed for him. If the common elements of dissimilar situations are pointed out to him and if numerous possibilities of transfer to a variety of concrete situations are carefully shown, there is every likelihood that the child will gradually come to generalize his experiences in terms of moral attitudes and trait names applicable to a wide variety of settings. Thus we might conclude with Hartshorne and May[67] that it is not necessary, for the intelligent child at least, to learn a definite mode of response to each and every concrete situation.

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[66] W. W. Charters, *op. cit.*, p. 110. Quoted by permission of the publisher.

This line of reasoning has led to considerable optimism among workers charged with the responsibility of making play activities and athletics as widely functional as possible.[68] It has also caused investigators to stress the importance for behavior integration of group morale and classroom codes.[69] It demonstrates as well the fact that both principles and specific practice are essential to the development of trait consistency. One supplements the other. Specific and unintegrated acts designed to affect a satisfactory adjustment to the requirements of life, appear first; then, as the results of the expansion process, comes the gradual consciousness of guiding principles; and finally, we see the generalized principles exert their influence as partial determiners of trait behavior.

The whole process is a complicated affair and should in no sense be thought of as being as simple as the proposed steps may sound on paper. The actions of the human organism are so baffling and counteracting influences are so numerous that the problem of arranging a series of desirable response-producing concrete situations is in itself a task of imposing magnitude.

Some Implications for Education.—Although conclusions drawn from the Character Education Inquiry and other tangible investigations must obviously be considered as tentative in nature, nevertheless a number of important results bearing on the value of current educational practices are suggestive as points of departure in attacking the problem of character and personality development. We can perhaps do no better then summarize the propositions touching on honesty offered by Hartshorne and May[70] themselves. Incidentally, the reader might keep in mind the fact that many desirable traits *other then honesty* could be treated in much the same manner.

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[67] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928, pp. 379–380.

[68] E. D. Mitchell and B. S. Mason, *The Theory of Play*, A. S. Barnes & Company, 1934, p. 267.

[69] H. Hartshorne and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, pp. 359–360.

[70] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928, pp. 412–414.

1. Children are not honest or dishonest by "nature." When a child finds himself in conflict with his environment, deception is a natural mode of adjustment and contains in itself no "moral" significance. If these indirect, socially disapproved ways of resolving conflicts are consistently successful, they will be continued unless desirable, honest methods are made equally successful through definite training in concrete situations.

2. Apart from actual practice of honest methods for gaining thwarted ends, the mere urging of honest behavior by teachers, even though emotionalized, has no necessary relation to control of conduct. This does not mean that the teaching of standards and ideals is undesirable or unnecessary, but only that current methods of inculcating ideals probably do little good and may do some harm.

3. Since the total "situation" plays such a large part in the control of behavior, both in its larger aspects, such as the personality of the teacher, the conduct of other pupils, etc., and with respect to such subtle aspects as the nature of the opportunity to deceive, the kind of material or test used, and so on, it seems essential that a careful analysis should be made of all possible situations for the purpose of *pointing out to children direct honest modes of conduct which carry with them appropriate rewards in the form of social approval and satisfaction.*

4. In connection with the direction of these honesty responses, an effort should be made to clarify for the child the essential difference between honest and dishonest modes of social interaction that he may evaluate the consequences of either method in terms of his own integration and the social good.

5. Since deceit is tied up with such handicaps as social background, home conditions, personal limitations, etc., there is obviously need for understanding *particular examples* of dishonesty before undertaking to judge the blameworthiness of an individual. For the sake of a child's development, as many personal limitations as possible should be removed. There is no evidence for believing that "dishonest" children would not respond in an honest way with equal satisfaction if the situations giving opportunity for cheating were better controlled by those responsible. Instead of teaching honesty as a "trait," the school

should provide consistent and continuous opportunities for the successful use of such forms of conduct as are conducive to the common good.

V. THE PROBLEM OF PERSONALITY "TYPES"

The Tendency to Classify Personalities into "Trait" Types.—The marked tendency of human beings to classify their fellow men in terms of innate, predetermined traits probably reaches its fruition in the popular idea of personality types. We hear much about the "businessman" type, the "administrative" type, the "school teacher" type, the "homebody" type, not to mention such psychological categories as introvert-extrovert, dominant-submissive, and normal-subnormal types. Laymen, essayists, and even scientists seem possessed of a penchant for the neat pigeonhole classification of human differences in personality. And through all the divisions, there runs the tacit premise that each type is characterized by a unique grouping of static traits of character or personal idiosyncrasy, all of which maintain their independent complexion while running the entire gamut of variable stimulating situations.

In its naïve aspects, this is a priori trait consistency with a vengence. Assuming as it does, the existence of fixed constellations of so-called "personality traits," this position perpetrates the fallacy of calling such traits into being by fiat; it suggests that we can create these traits (as popularly defined) by the simple expediency of naming them. Furthermore, it is customary to regard these dominant characteristics (traits) of people as being unquestionably inborn.

Inherent Difficulties in the Type Idea.—This proclivity of man to classify anything and everything on the basis of hard and fast lines of demarcation has met with considerable objection from both the statistical and psychological angles. While it is a well-known truism that men differ among themselves in a great many respects, it is obvious upon critical reflection that unless we insist upon comparing the relatively few extreme cases usually available, they do not necessarily differ in the clear-cut type sense. If they did, everyone would be distinctly either blond or brunette, good or bad, tall or short, bright or dull, stable or unstable, extrovertive or introvertive, optimistic or pessimistic, etc. As a matter of fact, we know from test results that different individuals are characterized by the possession of varying combinations and balances among the galaxy of specific tendencies to react which we have been in the habit of classifying under trait names. We recognize the individual personality as a matrix within which a great variety of complex skills, dispositions, and points of view combine with one another in multitudinous *situation-elicited* combinations.

Thus none but extreme cases (and these are usually institutionalized) may properly be thought of as sufficiently fixed in the behavioral sense to warrant the "type" appellation. We know, too, that in the usual stream of home and community experience, conditions bring about the generation of sufficiently dissimilar, specific behavior tendencies in the rank and file of individuals to throw them into the customary normal curve of distribution when objective-test results are available. This means, of course, that, since individuals fluctuate as much as they do from one so-called "trait" to another in answering the usual sampling of specific personality test items, in plotting measureable personality differences we find them shading off into each other by imperceptible degrees.

So we can say that just as Thorndike[71] found distributions of abilities and combinations of abilities to be almost invariably unimodal, *i.e.*, of one mediocre type, "When large unselected samples of a population are plotted in terms of a particular characteristic, for instance, honesty or dishonesty, a normal frequency curve is usually obtained."[72] This would seem to imply that people are as a whole of one type—the mediocre—and that individuals falling some distance on either side of the central point of the distribution curve are merely variations from the central tendency. On this basis, it should be clear that all personality type classifications can only be arbitrary categories assumed for convenience in discussion. But as Fisher says, "When used in this sense and with sufficient care not to obscure the fundamental fact of relativity, such classifications serve a very useful purpose, namely, that of brevity. But brevity must always come second to clearness and accuracy, otherwise one loses by it more than he gains."[73]

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[71] E. L. Thorndike, *Educational Psychology*, vol. III, Teacher's College, Columbia University, 1914, Chaps. 15, 16.

[72] G. D. Higginson, *Psychology*, The Macmillan Company, 1936, p. 619. Quoted by permission of the publisher.

The Bases of Type Psychology.—From this discussion, it should be clear that there are apparently only two bases upon which we could build a logical construct of "type" psychology. We could follow Freyd's[74] suggestion and substitute the word "extreme" for the more doubtful "type" and proceed to regard the two extremes in a distribution as possessing opposing or contrasting, but readily identifiable traits. Intermediate individuals would then be graded in quantitative relation to the clear-cut extremes or types. As a matter of fact, this is just what is done in tests of extroversion-introversion[75] ascendance-submission,[76] etc.

In the second place, we could proceed on the assumption that just as verbal, arithmetical, mechanical, and musical abilities are frequently found in clusters (of specific abilities) within the intellectual component of personality (high correlations within the clusters and low correlations among them), so unique constellations of traits—as functional groupings of specific reaction tendencies—set different groups of people off as being temperamentally of a kind, as it were.[77] This is the method used when personalities are characterized as being preponderantly social, artistic, scholarly, business-like, and so on.

Kretschmer's Morphological Types.—One of the most scientifically derived and convincing systems of typology is the one advanced by the German investigator, Kretschmer.[78] Basing his work on the previous findings of the eminent psychiatrist, Kraepelin,[79] this worker came to the conclusion that definite psychological traits parallel certain well-defined body builds. Kraepelin was the first to make clear distinctions among the major mental disorders. His greatest contribution was a demarcation between and description of the two principal groups of psychoses—the *manic-depressive* and *schizophrenic* (dementia praecox) diseases. The former he diagnosed as involving alternating flights of elation, hyperactivity, delusions of grandeur (manic phase), and anxiety, slowness of response, excessive melancholy (depressive phase). The symptoms of schizophrenia are said to include stereotyped actions, mutism, apathy, and emotional confusion.

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[73] V. E. Fisher, *An Introduction to Abnormal Psychology*, The Macmillan Company, 1929, p. 43. Quoted by permission of the publisher.

[74] M. Freyd, Introverts and Extroverts, *Psychological Review*, 31: 74–87, 1924.

[75] A. R. Gilliland and J. J. B. Morgan, An Objective Measure of Introversion-extroversion, *Journal of Abnormal and Social Psychology*, 26: 296–303, 1932.

[76] G. W. Allport, A Test for Ascendance-submission, *Journal of Abnormal and Social Psychology*, 23: 118–136, 1928.

[77] J. H. Griffiths, *op. cit.*, pp. 473–474.

[78] E. Kretschmer, *Physique and Character*, Harcourt, Brace & Company, 1925.

[79] E. Kraepelin, *Clinical Psychiatry* (trans. by A. R. Dieffendorf), The Macmillan Company, 1907.

Taking his clue from these findings, Kretschmer sought to learn whether there is an identifiable relationship between the presence of these mental aberrations and the physical characteristics of the individuals involved. In a study of 400 mental cases, he actually found a striking correlation between the two factors in question; the schizophrenics were, for the most part, fairly tall, lean, flat chested, and generally deficient of fat, while the manic-depressives turned out to be well-rounded, plump, rather short, deep chested, and otherwise given to portliness.

From his studies Kretschmer concluded that a similar relationship obtained between the body build and personality trends of normal individuals. He regarded the extreme psychopathic personalities as end products of personality trends detectable in normal persons. To him the geniune schizophrenic is the ultimate development of its normal counterpart—the *schizothyme*, or shut-in personality, while the true manic-depressive (cylothymosis) case is the extreme of the normal *cyclothyme*, or easy-going personality. Incidentally these concepts and classifications correspond as well to Jung's[80] well-known contrasted *introvertive* and *extrovertive* personalities. Kretschmer has labeled his normal schizothymes as having *asthenic* or *leptosome* bodies (underdeveloped and lean) and his cyclothymes as possessing *pyknic* features (round, thickset bodies). In addition, he mentions the *athletic* or muscularly well developed body type which tends to parallel the leptosomes, and the *dysplastic* type which includes those irregular and relatively unimportant bodily features which resist classification in the other groups.

[80] C. G. Jung, *Psychological Types* (trans. by H. G. Baynes), Harcourt, Brace & Company, 1923.

Although Kretschmer acknowledges that sharp lines cannot be drawn between his individual types and that doubtful borderline cases are bound to present themselves, he has attempted to refine his types by subdividing them into even more differentiated classifications as follows: The pyknic type, or cyclothymes, who are distinguished as, (1) the gay chatterbox, (2) the quiet humorist, (3) the silent good temper, (4) the happy enjoyers of life, and (5) the energetic practical man. As for the asthenic types, or schizothymes, they break up into (1) the polite individual, (2) the sensitive man, (3) the world-hostile idealist, (4) the cold, masterful natures and egoists, and (5) the dried and emotionally lamed. These classifications are given somewhat detailed treatment in Kretschmer's book.

In substantiation of Kretschmer's claims, it must be admitted that he has marshaled considerable tangible evidence in support of his theory. In his extensive study of psychopathic personalities, he found that 58 of 60 pyknic types were suffering from manic-depressive disorders, also that 81 out of 85 asthenic individuals were diagnosed by psychiatrists as schizophrenics. As for normal individuals, he says, "On the basis of actual research, it appears that ninety-five percent of pyknics are of predominantly cyclothyme temperament, and that seventy per cent of leptosomes (asthenics) are schzothymes."[81] Thus, as Burnham[82] further reiterates, we can hardly deny the marked correlation that appears to obtain between these body types and their corresponding personality pictures. This is especially evident when we learn that other critical studies, even those concerned with children, have for the most part substantiated Kretschmer's findings.[83]

The Validity of Kretschmer's Type Concept.—Nevertheless, it is well to remember that it is very doubtful whether all mankind can be so conveniently classified into a few mutually exclusive compartments. And this difficulty cannot be entirely alleviated by providing handy overflow types, such as Kretschmer's athletic and dysplastic groups and Jung's ambivert type. No doubt, all of these so-called "type" individuals, no matter how stereotyped in action and attitude, tend to respond in a variety of mixed-type ways when stimulated by highly diverse conditions. They may be characterized by fairly consolidated groupings of habits, but they too are subject to the fundamental axiom of the environmentalist that all responses are a function, at least in part, of the specific stimulating situations eliciting them.

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[81] E. Kretschmer, *The Psychology of Men of Genius* (Trans. by R. B. Cattel), Harcourt, Brace & Company, 1931, p. 53.

[82] W. H. Burnham, *The Wholesome Personality*, D. Appleton-Century Company, Inc., 1932, p. 125.

[83] See, for example, L. Polen, Körperbau and Charakter, *Archiv für die gesamte Psychologie*, 66: 1–116, 1928. Also, W. S. Krasusky, Kretschmer's konstitutionelle Typen unter den Kindern in Schulalter, *Archiv für Kinderheilkunde*, 87: 22–32, 1927.

Trait constellations may become well consolidated, but they are still integrated accumulations of "specifics." Furthermore, as Trow[84] points out, ". . . it can readily be seen that the schizoid-cycloid classification itself, thought suggestive and sometimes perhaps useful, leaves much to be desired." That such a concept has been suggestive to some students there can be no doubt. A new volume[85] has recently been published in which the body-type-psychological-trait connection is assumed to be unquestionable. In addition, the thesis is advanced that such types are biologically inherited and thus subject to only slight modification by way of the social environment. Perhaps we should add that the verity of this declaration is a matter for future determination.

Spranger's Common-interests Types.—In reading the American literature on psychology, psychiatry, and psychoanalysis, one is impressed by the extent to which social factors are advanced as major determinants of personality attributes. One rather unwittingly falls into the habits of taking for granted the all-powerful influence of life conditions in the realm of attitude building. This may be well and good if conclusions are based on tangible data; nevertheless, it is no doubt beneficial occasionally to lend an ear to the interpretations of those who are in opposition to the current psychological mores. Such are the conclusions of Kretschmer and of other outstanding German workers, especially those associated with the *Kulturphilosophie* school of thought.

Spranger,[86] the leader of this group, believes that men may well be classified into types based upon community of interests and sense of value. Basing his conclusions upon a vicarious study of historical figures, Spranger came to the conclusion that the dominant attitudes of men and women are expressions of *natural* types—types which, though expressed through social intercourse, are ultimately largely predetermined in the genetic constitution. So he has posited on armchair rather than laboratory or instrumental grounds, the existence of six fundamental "pure types" of individuals. These are differentiated on the basis of their subjective sense of values as theoretic, aesthetic, social, economic, political, and religious types.

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[84] W. C. Trow, *Educational Psychology*, Houghton Mifflin Company, 1931, p. 392.

[85] C. C. Fry and H. W. Haggard, *The Anatomy of Personality*, Harper & Brothers, 1936, especially Chaps. 1, 2.

[86] E. Spranger, *Types of Men*, Niemeyer, 1928.

Schwesinger[87] has written a graphic picture of how differently these diverse types would probably respond to the experience of motoring through new territory. She suggests, "The aesthetic type would revel in the beauty of the scenery; the theorist would speculate as to its geological beginnings, and its relation to neighboring plateaux and plains; the economic type would estimate its land value, fertility, crops produced, etc.; the social type would observe its inhabitants, their customs and play, and opportunities for social intercourse; the political type would see himself master of all he surveyed; while the religious type would see in the beauty and intricacy of the landscape the hand of God."

Spranger's types, so elaborately expounded in his book, may be characterized briefly as follows:

1. The theoretical: concerned principally with scientific matters, an objective search for truth, and the operation of law in natural phenomena; inclined to neglect social and political matters.
2. The economic: interested in business matters, goods, investments, profits, utility, and wealth; typical hard-headed businessmen with an eye to thrift and industry.
3. The aesthetic: lover of the beautiful in sound, form, color, and proportion; inclined to be impractical and impatient with conventional and economic matters; craves freedom from regimentation.
4. The social: promoter of philanthropic social movements and humane enterprises in general; given to sympathy and service without forethought of reward or self-aggrandizement; inclined to live for others.
5. The political: motivated by strong desire for power over his fellow men; the manipulator of political intrigues and of men's destinies; always on the lookout for opportunities to gain autocratic control.
6. The religious: either the mystic who sees the divine hand in every ramification of life or the ardent missionary who gives up everything for the salvation of others or the "message" which he loves.

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[87] G. C. Schwesinger, *op. cit.*, p. 379. Quoted by permission of the publisher.

Objections to Spranger's Type Psychology.—That these personality pictures obtain in many instances there can be no gainsaying; certainly, there are many individuals whose attitudes and interests combine in such a way as to label them as being perdominantly social, aesthetic, business-like, etc. But the objections to strict type classification hold here as elsewhere. Patterns of response among normals are never static; they fluctuate from situation to situation; and they are subject to the limitations of the principle of the specificity of behavior.

The writer has observed in his service club, for instance, that many men who are characteristically business-like (economic type) are on festive occasions decidedly *social*, also that they frequently indulge in *political* enterprizes and *aesthetic* endeavors. In a word, they fluctuate among a variety of organized aspects of their personalities, exemplifying on any given occasion the one elicited by the circumstances of that occasion. One aspect may be predominant in general, but, among normal individuals, other aspects manifest themselves when the occasion demands. Thus, clear-cut natural types might well be accepted with some caution. We can say, however, that while Spranger has largely neglected the social-stimulus factor in the generation and ultimate consolidation of specific personality traits, he has pointed out the existence of different dominating values in various classes of men and women.

Experimental investigation of the value types has tended to strengthen Spranger's position. Using a personality scale embodying specific life situations emblematic of the six varieties of interests or values in question, Allport and Vernon[88] found that Spranger's value interests are actually diagnostic of personality types. As Fig. 17 indicates, they discovered as well that there is considerable agreement between the political and economic and between the social and religious trait patterns; also that some types—economic and political, for example—are antagonistic toward others of a more gentle nature—aesthetic and religious. Thus, it is evident that while experimental data do not warrant the assumption of pigeon-hole independence of these so-called "types," they do indicate the presence of dominant value configurations of specific traits in individuals.

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[88] G. W. Allport and P. E. Vernon, *A Study of Values*, Houghton Mifflin Company, 1931. See also by the same authors, A Test for Personal Values, *Journal of Abnormal and Social Psychology*, 26: 231–248, 1931.

Jung's Introvert-extrovert Types.—Of special interest are the much-heralded psychological types advanced by the Swiss psychoanalyst, Jung.[89] This theorist has proposed to classify all, or practically all, mankind into the two well-known categories—*introvert* and *extrovert.* Like Kretschmer's types, these are regarded as being the "normal analogues" of the two major psychoses, schizophrenic (dementia praecox) and the manic-depressive disorders, respectively.[90]

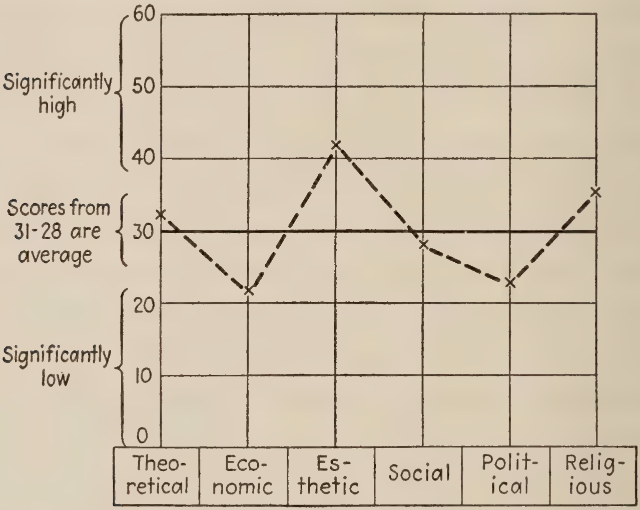

Fig. 17.—Profile of values—seventeen college teachers of languages and literature. [*From J. H. Griffiths, The Psychology of Human Behavior, Farrar & Rinehart, Inc.*, 1935, *p.* 487. (*Adapted from G. W. Allport and P. E. Vernon, A Study of Values, Houghton Mifflin Company,* 1931.) *Copyright* 1935. *Reproduced by permission of the publishers.*]

On the technical side, Jung describes introversion as a condition of psychological balance in which the individual tends to turn his libido or life energy inward, that is to say, he is governed by subjective factors. Extroversion, the opposite pole, or contrasted point of reference, is said to characterize the individual who expresses his libido with reference to objective things and people.[91] Practically speaking, the introvert is typically the "timid soul," the sensitive, reserved, and self-conscious individual, the radical on political and social matters, the shut-in personality who avoids the limelight. In direct contrast, the extrovert is said to be good natured, self-confident, given to socializing, not easily embarrassed, a good mixer, a man of action.

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[89] C. J. Jung, *op. cit.*

[90] As a matter of fact some investigators have sought to validate and to compute the diagnostic value of specific introvert-extrovert test items by checking them against the responses of "true" introverts (schizophrenics) and "true" extroverts (manic-depressives). See A. R. Gilliland and J. J. B. Morgan, An Objective Measure of Introversion-Extroversion, *Journal of Abnormal and Social Psychology*, 26: 296–303,1932. Also K. J. Campbell, An Application of the Extroversion-introversion Tests to the Insane, *Journal of Abnormal and Social Psychology*, 23: 479–481, 1929.

As popularly regarded, the typical introvert is the thinker who centers his activities and plans around himself, the brooder who resists suggestions and advice, the shy, reserved soul who seeks solitude and who suffers great embarrassment if made the object of attention. Because of his frequent disregard for the feelings of others, he is considered selfish and penurious. He is inclined to be somewhat cynical, suspicious, and dubious about authoritative declarations. In his choice of an occupation, he tends toward those callings which will give him optimal independence or at least an opportunity to work in private, *i.e.*, clerical work, machine trades, writing, research, and various other academic pursuits.[92]

The typical extrovertive personality is usually thought of as being the antithesis of the foregoing. He is interested in people, things, and social activities of all kinds. He is said to be a good promoter, politician, and salesman in general. He likes to be "in the swim" and is not particularly discouraged if things do not go to suit him. On the college campus, he is the "life of the party" and tends to be very popular if not overbearing or bold. He lives in terms of concrete realities and is quick to respond to challenges involving courage and optimism.[93] In the world of occupation, the extrovert tends to gravitate toward business, salesmanship, politics, promotion work, and comparable lines involving social ability.[94]

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[91] See also E. S. Conklin, Definitions of Introversion, Extroversion, and Allied Concepts, *Journal of Abnormal and Social Psychology*, 17: 377, 1923.

[92] See M. Freyd, *op. cit.*

[93] V. E. Fisher, *op. cit.*, pp. 51–52.

[94] Several extended lists of introvert-extrovert traits are extant. The following are suggested to the reader: D. A. Laird, How Personalities Are Found in Industry, *Industrial Psychology*, 1: 654–662, 1926, and Freyd, *op. cit.*

In an effort to effect a more detailed delineation of the introvert-extrovert personalities, Jung[95] has subdivided each into four subtypes as follows: the *thinking* introvert or extrovert, the *feeling* introvert or extrovert, the *intuitive* introvert or extrovert, the *sensation* introvert or extrovert. Even more detailed classifications have been attempted by others.[96]

Evidence for the Existence of Introvert-extrovert Types.—When we subject the introvert-extrovert-type assumption to statistical investigation, we come out with results decidedly at variance with the dual classification idea. When objective personality tests, previously validated on the basis of the responses of so-called "true" introverts (schizophrenics) and so-called "true" extroverts (manic-depressives), are applied to reliable samplings of normals, we get practically the same normal-curve distribution typical of testing programs in other fields. Such results have been secured by Heidbreder,[97] Gilliland,[98] and others. This means that, for the most part, when an individual checks the specific test items point by point, he answers some in a fashion diagnostic of introversion and others favorable to extroversion, with the result that he lands somewhere between the extremes. Accordingly most cases do not qualify as either introvertive or extrovertive—they are *ambivertive*, or composite.

Only a few individuals fall at the extreme ends of the curve, *i.e.*, are really introvertive or extrovertive, and they only may properly be thought of as types. We can say, however, that since many people exemplify patterns of trait groupings more or less suggestive of Jung's types, the terms applied to them are, in spite of their limitations, useful in describing attitudes which individuals take and in administering guidance of one kind or another.

As already indicated, results similar to these accrue when the Allports' ascendence-submission-trait test is given and plotted. Most individuals represent a composite of dominance and submission. Other types which have been proposed but which are hardly fixed or unitary are the eidetic types advanced

[95] C. J. Jung, *op. cit.*

[96] See J. J. B. Morgan, *The Psychology of Abnormal People*, Longmans, Green & Company, 1928, pp. 386–391.

[97] E. Heidbreder, Measuring Introversion and Extroversion, *Journal of Abnormal and Social Psychology*, 21: 120–134, 1926.

[98] A. R. Gilliland and J. J. B. Morgan, *op. cit.*

by Jaensch,[99] the chemical types studied by Rich,[100] and the emotional types suggested by Morgan.[101]

VI. CONCLUSION: THE NATURE OF PERSONALITY INTEGRATION

From what has been said, it should be clear that the problem of describing character and personality organization can hardly be solved by resorting to the postulation of so-called "psychological types." Types are obviously nothing more nor less than unique groupings of specific-traits actions and as such are subject to the same limitations when used as attempted descriptions of integrated behavior. What we want to know is how our early specific-reaction systems, of which Kantor[102] has said that there must be millions, develop as a sufficiently integrated and consistent whole to permit the possibility of behavior prediction, at least in the case of individuals who really outgrow infantile and adolescent stages of social maturity. This chapter has been concerned with this problem throughout, but now that we have the various theories and findings before us perhaps we can come to some brief but mature conclusions.

The Value of Desire for Integration.—According to Charters,[103] the integrating process, so imperative to the generalizing of discrete and unanalysed reaction systems, is given impetus by one of man's inherent tendencies—the desire for consistency of action. Out of this desire for the integration of all aspects or phases of character and personality has grown our elaborate system of ethics. Man seeks consistency and so he has sought to organize his multitudinous actions around a few fundamental principles of social conduct.

This desire for integration, which is no doubt learned from the results of both successful and mistaken adaptive actions, possesses great utility in that it leads us to develop such consistency of social conduct as our associates can count on as trustworthy. And as Charters further suggests, "From the personal point of view integration yields a sureness and effectiveness which enables the person to place behind his actions his full force and drive." In short, the integrated personality is not constantly handicapped by vacillations and inconsistencies among his various systems of trait action.

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[99] E. R. Jaensch, *Eidetic Imagery and Typological Methods of Investigation* (Trans. by O. Oeser), Harcourt, Brace & Company, 1930.

[100] G. J. Rich, A Bio-Chemical Approach to the Study of Personality, *Journal of Abnormal and Social Psychology*, 23: 158–175, 1928. Also by the same author, Body Acidity as Related to Emotional Excitability, *Archives of Neurology and Psychiatry*, 20: 589–594, 1928.

[101] J. J. B. Morgan, *op. cit.*, pp. 378–383.

[102] J. R. Kantor, *Principles of Psychology*, Alfred A. Knopf, Inc., 1924, p. 82.

[103] W. W. Charters, *op. cit.*, pp. 338–340. Quoted by permission of the publisher.

Methods of Effecting Integration.—If the integration of behavior and attitude must ultimately be accomplished and maintained by way of the genetic development of a broad pattern of trait systems, it follows that the individual under process of education should be put in touch with as wide a variety of social contacts as possible. As Brooks[104] puts it, since infant stimulating conditions normally result in the generation of small functional-trait units, and in view of the fact that these units come to be elicited in combinations made possible by the environmental experiences encountered, it is patent that a rich background of contacts tends "to increase the range of applications of these small functional wholes, and they then tend to become parts of larger units of response, especially as the individual through his purposes, reflection, and generalization sees a common or more general element in the otherwise diverse, unrelated situations."

And according to Ragsdale,[105] this field of experience should not be a sheltered one, rather it should be one in which there is opportunity for mistakes as well as for correct responses. Only in this way can a comprehensive personality, adapted to our social system, be attained.

We must come to the conclusion, then, that satisfactory integration can only be guaranteed through the avenues of meaningful experience and the development of powers of rational analysis. As we have so often mentioned, early behavior is, from an adult point of view, discrete and unorganized. Furthermore, Piaget[106] has demonstrated that child thinking is illogical, unanalyzed, and frequently contradictory.[107] But with the coming of ability to set goals, settle conflicting ideals, make logical attacks on hypotheses, discern principles of social action, and otherwise organize diverse behavior in harmony with guiding generalizations, we have the key to the integration of personality traits. One investigator has said "Teach a man to think, and integration will take care of itself."[108] Another competent writer concludes, "We are now in a position to see clearly that reasoning is the *sine qua non* of integration."[109]

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[104] F. D. Brooks, *Psychology of Adolescence*, Houghton Mifflin Company, 1929, pp. 432–433.

[105] C. E. Ragsdale, *op. cit.*, p. 352.

[106] J. Piaget, *The Child's Conception of the World*, Harcourt, Brace & Company, 1929.

Accordingly we see that specific learnings become consolidated through the generalization and application of principles of action. And the very heart-beat of the generalizing process is embodied in the ability to carry out the logic of inductive and deductive reasoning.

One point remains: it is often said that a man has as many "social selves" or functional aspects of the total personality as there are groups with which he moves. Some factor or agency must keep harmony among these diverse systems if dissociation is to be avoided. Unity and consistency must be maintained within the total field of seeming variety. Functional systems of varying degrees of consistency, some closely and others loosely associated, must achieve and maintain integration as a total organized configuration. As Chapman and Counts[110] say, "This process of integration of the minor personalities into a single harmonious self constitutes the essence of character formation and the emergence of personality."

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[107] Morton Prince has shown from his rich clinical experience that even adults are prone to contradictory reactions. He writes, "The individual reacts at one moment with one set of traits and at another with another, perhaps of an opposite character. Indeed he may possess, as I have said, traits that are antagonistic to one another, such as sentiments of hatred and love, or interest and disinterest for the same object; . . . Obviously such opposing traits cannot be manifested at one and the same moment, but let the conditions of the organism be altered, such as accrues in fatigue, or illness, or intoxication . . . or moods; or let the conditions of the environment be altered and one or the other of these opposing traits comes into functional activity (M. Prince, The Problems of Personality, *Pedagogical Seminary*, 23: 269, 1925).

[108] W. W. CHARTERS, *op. cit.*, p. 341. Quoted by permission of the publisher.

[109] M. W. CURTI, *op. cit.*, p. 508.

[110] J. C. CHAPMAN and G. S. COUNTS, *Principles of Education*, Houghton Mifflin Company, 1924, p. 141.

In looking about for the central core around which all this much-to-be-desired integration must be enveloped, we must cast our lot with what are usually called high ideals, dominant motives, and objectives for the conduct of life. Through these unifying influences, we may achieve consistency of trait action. Perhaps only through such an avenue may we be reasonably well assured that our specific acts, thoughts, and feelings will be in accord with the broader and more ethical inner systems which constitute the total integrated personality.

Questions for Stimulating Thought and Discussion

1. Offer a critique on research data of the common assumption that because certain personality traits appear in the first weeks of life they are germinally inherited. Can you show that such traits are acquired? Try to do so.
2. To what extent do you think the quality of personality attributes arising in the originally undifferentiated infant can be controlled by the use of psychological methods? How would you develop stubbornness or the more desirable quality of altruism? Explain in detail.
3. Are the exponents of specific vs. unitary traits necessarily in direct opposition to each other? Show how the differences in age and maturity of their subjects (as objects of study) might account for the seeming conflict of views.
4. Why do you suppose some psychologists are so opposed to the doctrine of specificity of behavior? Could it be because the ultimate consolidation of character and personality attributes would be so difficult to achieve under such circumstances? Elaborate on this idea or offer a better one.
5. What is meant by the *relative* or biosocial nature of personality traits? Why can a given individual's personality qualities never be evaluated on a strictly absolute basis? To what extent can this situation be obviated by setting up objective trait criteria?
6. What kind of "reasoning" must have led to the conclusion that the possession of certain personal qualities implied a corresponding weakness in others? Is such a proposal in harmony with the notion of trait "specificity"? What are its implications for education?
7. Describe how you would attempt to engender a fairly consolidated trait of hospitality in a given child if provided with the opportunity. To what extent would the incidence of specificity of response from situation to situation be an asset or a handicap?
8. How can it be that the old-fashioned principles and precepts are accepted by modern psychologists as avenues to character and personality consolidation? Under what specific conditions are they said to be especially effective? What relation, if any, is there between these precepts and psychological "dispositions to behave" in characteristic ways?

9. Why is the idea of static personality *types* quite impossible among so-called "normal" individuals? What are the implications of specificity of behavior here? Under what conditions only is type psychology justified?
10. If there are distinct personality types among individuals why is it that distributions of personality-test scores usually yield a fairly symmetrical unimodal curve? How do you think Kretschmer and Spranger would attempt to overcome this objection? What is your answer to it?
11. What is your opinion of Charters' belief that personality integration is greatly aided and abetted by an inherent desire for consistency of belief and action? Would such integration come about spontaneously without the assistance of continual pressure from social mores and institutions? Defend your position from psychological principles.
12. What are the weaknesses, if any, of the position that reasoning, as the capacity to organize behavior in harmony with guiding principles and generalizations, is the key to personality integration? If the problem is this simple, why is the typical individual as inconsistent and disorganized as he is?

Recommended Readings

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CHAPTER VIII

MECHANISMS OF PERSONALITY DISTURBANCE

I. THE MEANING AND CHARACTER OF PERSONALITY DISTURBANCES

In common parlance, we frequently speak of individuals as possessing "wholesome" personalities or as being "well adjusted." We evidently mean by these designations that the persons in question are able to make relatively harmonious adaptations to the multitudinous social, economic, and other personal requirements of functional living. They are the fortunate individuals who manage their affairs judiciously, integrate conflicting tendencies into coherent patterns of response, and otherwise get along with a minimum of friction, fear, or uncertainty.

On the other hand, literally thousands of persons are said to be "queer," "unusual," "maladjusted," "abnormal," "neurotic," or even "psychopathic." Such designations apparently have reference to individuals who are not successful in adjusting themselves readily to the expectations of their more "normal" associates. They harbor tendencies and indulge in acts that are regarded as deviations from the rational way of life. In short, these people are the ones who are supposedly suffering from *personality disturbances.* They are the deviates or abnormals.

In view of the facts, however, that no one is wholly consistent or entirely organized in his behavior and that deviations are frequently matters of degree rather than kind, the question naturally arises as to who is normal and who is abnormal. In brief, since it is so difficult and sometimes well-nigh impossible to draw a sharp line between the two classes mentioned, when can we designate a person as being characterized by personality disturbances? This question, as well as the one touching on the relative severity of forms of disturbance, is important to an understanding of the organization of human personality.

Variations from Normal Behavior Symptomatic of Disturbance. At the outset, it should be made clear that freedom from personal conflict is not the criterion of normality. Everyone is confronted by a never-ending series of conflicting stimuli and tendencies to act which must be harmonized in favor of socially consistent living.[1] Children must decide, for example, between the pleasures of playing hooky and the possible wrath of a teacher, between stealing a greatly desired object and the chance of severe punishment, between lying about a misdemeanor and making a frank admission, or between taking it easy in school and the probability of parental rewards for high marks. Similarly, adults must often decide between secret indulgences and socially approved standards, between education with temporary poverty and a job with relative plenty, between skill acquired by great effort and mediocrity with ease, or perhaps between going on a pleasure trip and staying by some important homework. As one psychologist[2] has rightfully said, "From the simplest to the most complex phases of life, conflict is the normal order of the day."

The normal person, if such there be, is the individual who has learned how to respond to dilemmas in ways well calculated to solve such problems as may be involved. Thus children and youth who are demonstrating difficulty in adapting themselves to problematic situations (problem children) should not be regarded as queer or perverse. They are frequently merely misguided individuals devoid of a clear conception of the issues involved and congruous ways of meeting them. Conflict is universal, and the concept of normality vs. abnormality can only have reference to the manner and extent to which a given individual solves his constantly recurring problems.

In seeking for an answer to the question as to who is or is not normal psychologically, we are practically forced to think in terms of norms or averages. From our knowledge of the curve of probability, we know that the majority of individuals cluster around a central tendency, no matter what human traits or qualities are under examination. Thus, we think of the *normal* person as the *average* person and the abnormal individual as the one who deviates noticeably from the central tendency or norm for his group. It should be evident, then, that the psychologist regards the psychologically normal man as one who behaves and adjusts in ways typical of the rank and file of individuals. We could say, for example, that one who is extremely afraid of vacant lots or perhaps of cracks in a sidewalk is ordinarily regarded as being irrational or abnormal on these specific points, but if the great majority of people were similarly afraid of these objects, those who were unafraid of them would be thought of as being deviates or abnormals.

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[1] For an outstanding study of conflicts, see A. R. Luria, *The Nature of Human Conflicts* (trans. by W. H. Garnitt), Liveright Publishing Corporation, 1932.

[2] J. J. B. MORGAN, *Child Psychology*, Farrar & Rinehart, Inc., 1934, p. 454. Copyright 1934. Reprinted by permission of the publishers.

A person is classified, not in terms of being "odd" or "offensive" in an absolute sense, but with reference to the extent or manner in which he differs from the statistical norm. Abnormality is, in this sense, a relative concept and merely brands a personality as being quantitatively or qualitatively (or both) different in behavior from the usual or customary. Since an individual's personality is essentially relative and biosocial, it could not be evaluated except in terms of a comparison with a group of other representative persons.

Quantitative vs. Qualitative Deviations in Behavior.—Some students insist that abnormal (deviate) behavior always differs from the normal in the quantitative sense, *i.e.*, that it is always a matter of "too much or too little." In this vein, Higginson[3] writes, "The person who hates too much or too little; he who fears nothing or everything; the man who rides a hobby too hard or is not interested in anything—all such persons and many more are regarded as being mentally abnormal. The abnormal person may talk too much, or he does not talk enough; he wishes to pray too frequently, or too long; he wears too many, or too few clothes; and so on."

Although these quantitative behavior deviations are certainly very much in evidence, others occur which may properly be regarded as differing in quality or kind. We could mention the paranoiac who reads sinister persecutory designs into the actions of all those who look his way, the manic who attacks those who are attempting to minister to his practical needs, the schizophrenic who refuses to eat or drink, and the less easily classified deviate who insists that Roquefort cheese is the best hair tonic yet devised. These are extreme and easily recognizable forms of psychological aberration (psychoses), but they can be matched as to qualitative deviation by individuals whose deviations from customary behavior are not so striking.

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[3] G. D. Higginson, *Fields of Psychology*, Henry Holt & Company, 1931, p. 490.

We can conclude, then, that abnormals, insofar as they can be detected and whether mild or extreme in their manifestations, are individuals who behave in ways that do not match up with the mores of the group in which they move. This motley crowd of so-called "disturbed personalities" may include, to quote Campbell,[4] "respectable bankers, peevish with their wives; scrupulous housewives with immaculate and uncomfortable homes; children with night-terrors and all sorts of wayward reactions; earnest reformers, intellectuals, aesthetes; delicate and refined invalids, evasive and tyrannical, with manifold symptoms and transitory dramatic episodes; patients delirious with fever, or reduced by a great variety of organic diseases; patients frozen with melancholy or indulging in an orgy of exuberant activity; patients living in a fantastic world with morbid visions and communications and uncanny influences, in whose universe one sees no coherence or logical structure; patients keenly logical and argumentative, embittered, and seeing around them a hostile world with which they refuse to compromise."

Although this list of abnormals runs nearly the entire gamut of behavior deviations, both mild and extreme, quantitative and qualitative, for our purposes we are interested primarily in those of a less serious nature, but which illustrate the many personality disturbances observed in persons moving freely about us in the daily walks of life.

The Question of Biological vs. Social Causation.—As previous discussions in this volume have indicated, nearly all human qualities and abilities are regarded by people in general as being quite definitely biologically inherited, *i.e.*, potential in the genetic constitution. Individuals are usually described as "taking after" a father, mother, aunt, uncle, grandparent, or some other "branch of the family tree." And so it is in the realm of personality disorders. All sorts of maladies are blindly ascribed to that catchall for unknown factors—heredity. As Moss and Hunt[5] comment, "There is . . . too great a tendency blindly to accept heredity as a causal agent when we are ignorant of the true cause."

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[4] C. Campbell, *A Present Day Conception of Mental Disorders*, Harvard University Press, 1924, p. 25.

[5] F. A. Moss and T. Hunt, *Foundations of Abnormal Psychology*, Prentice-Hall Company, 1932, p. 242.

This penchant for gene inheritance has resulted in considerable confusion as to the nature and true etiology of the various psychological diseases (frequently called "mental diseases") as well as the more minor, but nevertheless significant, personality disturbances with which we are primarily concerned in this chapter. It has minimized the influence of environmental pressures, thus creating a false social distinction between individuals suffering from so-called "mental" vs. "physical" diseases. Thus, this naïve exploitation of heredity as the cause of both personality deviations and out-and-out psychological diseases has eventuated in no small amount of embarrassment or social stigma to the layman who is unfortunate enough to have one or two cases of "insanity"[6] in his family.

From a monistic or even a practical scientific point of view, such a distinction is obviously incongruous. Unless personality aberrations follow definite ratios of biological inheritance, there is no more disgrace (in the sense of a family "taint") in being related to a paranoiac (a patient suffering from systematic delusions of persecution) than to a victim of cancer or tuberculosis. Each affliction is a disturbance of some phase or system of the organism.

Speaking from personal experience in clinical work, Bond[7] writes as follows concerning the dangers of loose interpretations of data for gene inheritance in the personality field: "It creates an alarm in the mind of the public, which in certain individuals is so great and obsessing, as by its own force, to precipitate mental disorder, or, as an escape from an imaginary doom, to result in suicide. No one who has had opportunity to study this subject can doubt that there are cases and types of mental disorder, which are truly inherited, but when mental disorder happens to exist in two persons who are blood relations, belief in heredity does not warrant, without further consideration of the facts of their cases, an automatic ascription of "heredity" as one of the causes—too often, indeed, as the principal cause—of the mental illness."

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[6] The word "insanity," it should be noted, is not a medical or psychological term; it represents rather legal or sociological terminology. An insane person is not one characterized by specific symptoms or aberrations of behavior, but one who, due to psychological disorders, is unable to maintain his social status and to make appropriate adaptations to the requirements of life.

[7] Quoted in U. C. R. Lord, *Contributions to Psychiatry, Neurology and Sociology*, Harper & Brothers, 1929, p. 12.

That such dangers exist can be attested to by all who have had clinical experience. The writer has encountered them among his students and patients. Many feel that they are in the relentless grip of a family taint which they cannot escape and which will surely overtake them when the appointed time comes.

Typical Views on the Influence of Heredity and Environment.—That heredity plays some part in the production of actual mental disorders is certainly plausible,[8] but as Moss and Hunt[9] declare, a careful examination of extant data leads to the conclusion that "only a few mental disorders are hereditary." According to them, heredity plays its greatest role in the realm of feeblemindedness. Of the major psychoses, they regard two only as hereditary to any important extent—dementia praecox (schizophrenia) and manic-depressive psychosis, with the latter predominating as to recurrences through several generations. But even here the evidence is far from conclusive.

We might contend, thus, that if the case for biological inheritance of major psychological disorders is so doubtful, the case for the inheritance of more minor personality disturbances is certainly not very convincing. If it exists at all, it probably appears in the form of a general constitutional susceptibility to personality disorders rather than as specific proclivities toward such manifestations as fears, phobias, obsessions, tantrums, conflicts, complexes, inferiorities, fantasy, overcompensation, and other distortions of reality.

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[8] In a study of neuropathic (apparently synonymous with "psychopathic") patients embracing 72 families and involving 206 different matings with a total of 1,097 offspring, Rosanoff and Orr found what they regarded as a close correspondence between theoretical expectations of transmission of neuropathic constitution and actual findings. They concluded at the time "that the fact of the hereditary transmission of the neuropathic constitution as a recessive trait in accordance with the Mendelian theory, may be regarded as definitely established." While these findings are directly contrary to those of other competent workers, Rosanoff believes that he has substantiated them by later data (A. J. Rosanoff and F. I. Orr, A Study of Heredity in Insanity in the Light of the Mendelian Orders in Twins, *Eugenia News*, no. 5, Oct., 1911, pp. 221–228, 1931).

[9] F. A. Moss and T. Hunt, *op. cit.*, p. 244.

That most of the psychological disorders, serious and otherwise, formerly ascribed to heredity may be due to environmental forces, both social and psychological, is now believed by many outstanding psychologists and psychiatrists. This is, of course, the psychoanalytical approach, but students of human nature who see strict causation working in the development of behavior patterns, normal and abnormal, believe that there are plenty of data pointing toward the thesis of environmental causation. They contend that disordered reactions are frequently regarded as being constitutional simply because their true causes—environmental or submerged in the "unconscious"—are not discernible.

White,[10] an eminent psychiatrist, has long since called attention to the importance of the social environment approach for psychotherapy. He remarks, "It is true that many students of heredity believe that all sorts of mental qualities may be traced directly from the ancestors. Those physicians, however, who deal with the problems of mental illness see, on the contrary, these peculiarities passed on because, as a part of the child's environment, they are impressed upon it during its development period. This view has been emphasized because it has been found possible to largely modify so many personal mental traits. Heredity as an explanation is therefore looked upon somewhat askance because it serves to block efforts at improvement. If a certain trait is hereditary, why, that's the end of it. There is nothing to be done. So frequently, however, something can be done that this explanation is being more and more put aside as inadequate."

White[11] has elsewhere declared that the psychoses, as well as milder forms of disorder, may be induced by such a sudden shock, for example, as the sight of the dead and dying in a railroad wreck. Disturbances may also be brought on by a protracted period of worry and anxiety. These observations have been further verified by Glueck,[12] who found that the emotional stress incidental to imprisonment "furnishes us with a great variety of mental disorders, the origin of which can be traced in a more or less direct manner to the emotional shock and influence upon the psyche which it brings about."

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[10] W. A. White, *The Mental Hygiene of Childhood*, Little, Brown & Company, 1919, pp. viii–ix. See also White's recently published lecture *Twentieth Century Psychiatry*, W. W. Norton & Company, Inc., 1937.

[11] W. A. White, *Outline of Psychiatry*, Nervous and Mental Disease Publishing Company, 1921, p. 40.

[12] B. Glueck, *Studies in Forensic Psychiatry*, Little, Brown & Company, 1916, p. 3.

Problem of the Physical Basis of Psychological Disorders.—Students of psychology and psychiatry have long wondered to what extent, if any, abnormal behavior is causally associated with glandular malfunctioning. If the organism is a physiological unit, it would appear, on first thought, that all behavior forms are axiomatically counterparts of functions of physiological processes. In this sense, glandular disorders, for example, would eventuate in corresponding behavior aberrations, *i.e.*, they would always cause personality disturbances.

But it would obviously be a mistake to come to such a conclusion on purely theoretical grounds, especially when we consider the disappointments already encountered by those who have attempted to find a physiological basis for "mind" and individual attitudes. Patterns of action, normal and abnormal, may be personal accretions acquired in the maelstrom of affective experience quite independently of the integrity of glandular functioning. This does not mean that there is no connection between endocrine dysfunction and abnormal behavior, but it does suggest the necessity of securing direct experimental evidence in the matter insofar as such is available.

Investigators who have attempted to ascertain the degree of relationship obtaining between glandular disturbances and personality disorders have been hampered greatly by a series of militating factors. The outstanding ones have been suggested by Ingle.[13] In the first place, both endocrine dysfunction and personality deviations occur frequently and may easily be associated by chance. Secondly, endocrinologists tell us that it is very difficult to diagnose glandular dysfunction correctly. Then again, we all know that it is extremely difficult as well to discriminate between normal and allegedly abnormal behavior.

And to complicate matters further, few of us are entirely free from some specific personality traits which might, on a relative basis, be considered abnormal by someone. This point suggests the important fact that in the abnormal field as elsewhere the principle of specificity of behavior obtains. An individual may, according to the best criteria available, deviate into the abnormal realm on some specific points—irrational fear of close places (claustrophobia), for instance—and yet be regarded as wholly normal in all other respects.[14] His abnormal behavior is consistent in like situations, but appears only in those specific instances in connection with which he has been undesirably conditioned. Finally, as Ingle notes, evaluations of improvement in endocrine therapy are likely to be invalidated by the factor of suggestibility as it affects both subject and observer.

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[13] D. J. INGLE, Endocrine Function and Personality, *Psychological Review*, 42: 473, 1935.

Evidence from Endocrinological Research.—Nevertheless, significant findings have been reported by a number of careful workers. Rowe[15] has studied the relation between endocrinopathies and behavior abnormalities using a sampling of 4,000 patients, 615 of whom were less than seventeen years of age. Of the 374 cases of endocrine dysfunction among the latter, 18.2 per cent were characterized by behavior problems, whereas among the 276 "nonendocrines" only 13 per cent were so afflicted.

In interpreting these data, however, allowance must be made for the likelihood that patients enjoying normal endocrine balance were the victims of certain "neurologic conditions" which are themselves productive of behavior deviations. When Rowe compared the behavior disorders obtaining between the groups he found no significant differences that could not be accounted for by chance. Specific types of behavior problems did not appear to be causally related to glandular disturbance. This was particularly true of phobias, emotional instabilities, and backwardness.

In a later investigation, Rowe and Pollock[16] have examined the possible connection between the psychoses or psychoneuroses and glandular dysfunction. They found that among 250 patients classified as "mental" (diagnosed as victims of psychosis or psychoneurosis) a ratio of 3:1 were suffering from an associated endocrine dysfunction. Approaching the problem from another angle they discovered that 8.1 per cent of 2,308 individuals characterized by endocrine malfunction were also the victims of some mental disorder, whereas only 3.7 per cent of the "nonendocrines" showed an associated psychosis.

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[14] See W. H. R. Rivers, *Instinct and the Unconscious*, Cambridge University Press, 1922.

[15] A. W. Rowe, A Possible Endocrine Factor in the Behavior Problems of the Young, *American Journal of Orthopsychiatry*, 1: 451–475, 1931.

[16] A. W. Rowe and H. M. Pollock, Psychoses, Psychoneuroses, and Endocrine Dysfunction, *Endocrinology*, 17: 658–666, 1933.

These data indicate a relation between physiological and psychological disturbances, but whether the association is a causal or concomitant one is evidently a moot question. As a matter of fact, in a metabolic study of dementia praecox patients made by Hoskins and Sleeper,[17] exactly one-half (50 per cent) of the cases were characterized by dysfunction of the thyroid, pituitary, or some other endocrine gland. The other 50 per cent were free from endocrine involvements while at the same time diagnosed as "psychopathic" (or neuropathic). However, when endocrinotherapy measures were applied, more than three times as many "endocrines" as "nonendocrines" showed improvement in behavior and personality.

It is clear from these findings that "deviations from normal personality are associated with endocrine disorders more frequently than chance will allow," but also that "the association is not inevitable and that either may occur without the other."[18] From the causal point of view, these disclosures have resulted in a veritable reversal of attitude toward the etiology of personality disturbances. The following excerpt from Richards[19] is typical: "The attitude of conservative medicine toward thyroid over-activity is different from what it used to be. Years ago the thyroid was accused of causing a great majority of nervous instabilities. Now we are asking ourselves what stirs up the thyroid to misbehave, and we are finding that emotional instabilities of constitutional nature very often precede thyroid upsets."

It may be, then, that in our science-inspired quest for the physiological basis of personality and behavior, we have taken some things for granted that will not stand the test of critical examination. Assuming as we have that psychologic differences in personality have an endocrine basis, we have expected to see significant alterations in quantity of hormone secretion followed by profound changes in personality. Thus, the fact that such changes do not by any means always follow has given us some food for thought. It suggests that, although endocrine balance is for the most part very important in the maintenance of organism integrity, it is not always imperative to the maintainance of normal personality.

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[17] R. G. Hoskins and F. H. Sleeper, Endocrine Studies in Dementia Praecox, *Endocrinology*, 13: 245–262, 1929.

[18] D. J. Ingle, *op. cit.*, p. 475.

[19] E. L. Richards, *Behavior Aspects of Child Conduct*, The Macmillan Company, 1932, pp. 144–145. Quoted by permission of the publisher.

Cerebral Injuries Affecting Personality.—It frequently happens that conclusions, based on pioneer investigations and regarded as essentially conclusive, are almost completely reversed by later more carefully controlled and extensively executed experiments. This has been the case with studies touching on the relation between brain injuries and personality aberrations. Working at the Judge Baker Foundation, Kasanin[20] looked for the incidence of brain injury among 120 cases diagnosed as "psychopathic personalities." He found 10 per cent thus afflicted as compared with less than 2 per cent in a control group (nonpsychopathic) of the same magnitude. He noted also that such behavior disorders as temper tantrums, mental instability, and egocentricity frequently followed cases of encephalitis (a disease of the brain). Very similar results were secured by Scott,[21] who studied the behavior of 35 encephalitis patients subsequent to recovery from the disease. In this case, all but one continued to suffer from personality disturbances.

Undeterred by these results and apparently not convinced that organic disorders of this nature must of necessity be followed by psychological deficiencies or social or personal maladjustment, Bond and Appel[22] utilized a rich regime of physical and social activities for the rehabilitation of a group of children in whose cases encephalitis had already run its course. The special social therapeutics utilized included activities associated with swimming pools, gymnasiums, playgrounds, gardens, camps, and woods. Services were available from psychologists, physicians, nurses, and teachers. According to the report, whereas the youngsters were initially "intolerable" and a great irritation to both parents and community, at the conclusion of the treatment 26 out of 48 were said to be normal in their behavior life. Some improvement was in evidence in all but three cases.

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[20] J. Kasanin, Personality Changes in Children Following Cerebral Trauma, *Journal of Nervous and Mental Diseases*, 69: 395–406, 1929.

[21] L. M. Scott, The Role of the Psychiatric Social Worker in the Treatment of Post-Encephalitis: A Study of Results with Thirty-five Patients, *Smith College Studies in Social Work*, 1: 180–209, 1930–1931.

[22] E. D. Bond and K. E. Appel, *The Treatment of Behavior Disorders Following Encephalitis: An Experiment in Re-education*, The Commonwealth Fund 1931.

From this significant investigation, it would appear that personality disorders, supposedly arising out of organic disturbances may sometimes be overcome by providing the patients concerned with such social satisfactions as meet their need for recognition and favorable notice as well as their natural desire for physical activity in the form of work and play. It seems, then, that the alleged causal relation between organic imbalance and personality aberrations is a very uncertain matter.

In commenting on this important question, Stoddard and Wellman[23] have gone on record as follows: "It seems tenable therefore as an hypothesis that even if some organic basis should be discovered for aberrative tendencies it might still not be a true cause. The primary cause may reside in the child's personal and social relations as plausibly as in endocrine or nervous tissue abnormality." This is the optimistic view which stresses the possibility of marked personality improvements when conditions causally conducive thereto are provided. It is the position which we wish to amplify further in this chapter.

Validity of the Subject Matter of Abnormal Psychology.—That the problem of dealing with the mounting toll of psychological abnormalities in our contemporary society is an extremely significant one, no informed person will deny. In the realm of out-and-out functional psychoneuroses and psychoses the amount of misery and social waste entailed thereby is appalling. According to William Mayo, of the famous Mayo clinic, " . . . neurasthenia, psychasthenia, hysteria, and allied neuroses are the causes of more human misery than tuberculosis or cancer."[24] As early as 1927 there were actually as many unfortunates suffering from psychological diseases occupying hospital (or other institutional) beds as there were occupants from all the organic diseases put together.[25] By 1934, it was estimated that around 400,000 nervous and mental cases were incarcerated in institutions designed for their care.[26]

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[23] G. D. Stoddard and B. L. Wellman, *Child Psychology*, The Macmillan Company, 1934, p. 339. Quoted by permission of the publisher.

[24] Quoted in, G. D. Higginson, *op. cit.*, p. 510.

[25] *Ibid.*

[26] *Ibid.*, p. 512.

In commenting upon the seriousness of this trend, James May,[27] superintendent of the Boston State Hospital, declares that "although the evidence of mental as compared with other diseases prevalent in the community cannot be established with absolute accuracy, sufficient evidence has been presented to warrant the statement that from the standpoint of public health we are dealing with no other problem of equal importance today."

While there are no reliable data available touching on the extent or prevalence of the more minor psychological disturbances such as we are principally concerned with in the present discussion, we have every reason for believing that they are extremely widespread. And to say that they are productive of a vast amount of unhappiness is practically to indulge in an elaboration of the obvious. Medical practitioners testify that an appreciable fraction of their patients are suffering largely from psychological disturbances of an intangible but nevertheless serious nature, while those of us who deal directly with these disorders in private and school clinics are all too aware of their extent and seriousness. It is somewhat disconcerting to note that in spite of this significant situation, which certainly demands attention, not a great deal, of a tangible experimental nature, is known about either the true causes or the effective methods of treatment of many of the prevalent personality disorders. Such information as we have is largely of a subjective and theoretical sort, indeed, much of it is the contribution of psychoanalytic theory somewhat worked over. And according to Hunt and Landis,[28] textbook writers in the abnormal field have been woefully neglectful in the matter of presenting such experimental data as we do have.

In an analysis of 15 of the most widely used texts on abnormal psychology, these workers found that the experimental approach was accorded only 0.8 per cent of the total space. They called this situation a "glaring shortcoming." A scrutiny of seven standard texts in psychiatry revealed a similar situation, although in their case the subject matter in general was found to be rather closely knit around the "recognition, understanding and treatment of mental disease." The abnormal texts were said to be

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[27] J. V. May, *Mental Diseases, A Public Health Program*, Richard G. Badger, 1922, p. 30.

[28] W. A. Hunt and C. Landis, The Present Status of Abnormal Psychology, *Psychological Review*, 42: 78–90, 1935.

"waste baskets" for such odds and ends as hallucinations, delusions, automatisms, delirious flights, somnambulisms, etc., all of which were allegedly treated in a fashion little calculated to point out their functional relations.

While the paucity of substantial experimental material is quite apparent in the realm of personality disorders and although conclusions reached are frequently of a theoretical nature, the author believes that the knowledge which we have along this line has thrown a great deal of light on the problems of human nature, normal and abnormal. The material may be somewhat of an "armchair" variety, but it has, nevertheless, served to point out many significant facts about both the genesis of personality disturbances and appropriate therapeutics for their rehabilitation. In the pages that follow, we shall endeavor to point out some of the causes of maladjustment as we understand them, as well as some of the well-nigh universal mechanisms of attempted adjustment.

II. CAUSES OF PERSONALITY DISTURBANCES

Early Conceptions of Abnormal Behavior Causation.—The story of man's treatment of individuals suffering from personality disorders is not a very savory one. Being dotted as it is with curious mixtures of animism, superstition, and cruelty, it does not provide a very meritorious page in the history of the development of civilization. In early historic times, individuals suffering from what we now know as neurotic, psychotic, or even eccentric behavior were believed either to be possessed of demons or to be endowed by benign spirits with supernatural powers. They were creatures to be feared or worshiped. Joan of Arc, for instance, was regarded by her people as one intrusted with a divine spirit whereas her enemies thought her to be possessed of the devil. Even in her day, we find the demonological conception of disorder very prevalent.

The attitude of medieval, and even modern, man toward the phenomenon of psychological disorder is well illustrated in his treatment of so-called "witches." They, too, were accused of being in league with evil spirits and thus of inviting calamity or perhaps the ill will of the more benign gods. For their innocent "depredations" these abnormals were frequently stoned, burned, drowned, or otherwise put to death. And so we find that, owing to a naïve, but nevertheless ardent, belief in what we now call "animism" (causation through the intervention of spirits), deranged persons were ruthlessly tortured, derided, and not infrequently incarcerated in filthy, vermin-infested dungeons.[29]

Modern Attitudes toward Personality Disorders.—Our present-day conception of abnormal-behavior causation is, we are happy to note, a far cry from the above. For animism, with its mystic outlook, we have substituted the scientific notion of *causation* with its objective approach to the naturalistic phenomena of nature, organic and inorganic. In place of blaming unfortunates for their condition and our calamities, we endeavor to see in their aberrations the relentless operations of cause and effect and to offer them such humane treatment as facilities will permit. True, we have been rather credulous in assigning the causes of personality disturbance to such unverified agents as heredity (so often used as a substitute for ignorance), ill health, old age, drink, fever, masturbation, and pregnancy. Some of these, drink and ill health, for example, might perhaps be regarded as effects of psychological disturbances rather than as causes thereof.

Today, the principal controversy, touching on the matter of abnormal behavior etiology, hinges on the question of whether a disordered physiological background is always responsible. It is a matter of whether the causal antecedents of so-called "mental disturbances" are always organic or whether, perchance, they may be found in the psychological life of the subject involved. According to present knowledge and pronouncements, it appears that they may be derived from either or both of these sources. As strict materialists who look for organic pathology behind every marked personality disorder remind us, there are psychological diseases in which definite and apparently causal organic conditions are discernable. General paresis, with its disintegration of cortical tissue, is a case in point.

There are, however, a number of psychological diseases, such as hysteria and paranoia, for which no such physiological pathology can be located. These disturbances, as well as most of those of a more minor nature (phobias, complexes, tantrums, inferiority, fantasy, etc.), are said to be "functional" disorders, *i.e.*, they are nonorganic in origin. Those who hold this view of the matter are not necessarily dualists; they may be monists who regard psychological disorders as symptoms of underlying disturbances of the total personality.

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[29] F. Watts, *Abnormal Psychology and Education*, D. Appleton-Century Company, Inc., 1924, p. 13.

The Question of "Functional" Disorder Causation.—It is undeniable that the functional view of personality pathology is becoming very popular in psychological circles. The following excerpt from Glueck[30] is illustrative: "Those who still believe in an exclusively materialistic theory of mental disorder must find it extremely difficult to maintain their doctrine in the face of the many incontrovertible facts brought to light through modern research in the field of psychopathology.

"The modern trend in psychiatry is distinctly in the opposite direction. We no longer today insist upon material changes in cells and tissues for every psychotic phenomenon, but rather endeavor to investigate mental life, be it normal or abnormal, from the biologic point of view. We are being constantly confronted with the undeniable fact that whatever may be the physical substratum of mental disorder, it does not aid us in understanding the peculiar expression which a given psychosis chooses to assume. Why is it that one paretic greets us with the exalted mien of his grandiose delirium, while another spreads about him the gloom of a depressive delirium—the changes in the pryamidal cells do not explain. There must be, then, factors other than material ones which determine this."

Glueck may be right, but there are those who will disagree with him. They regard the organism as a physiological unit upon the tissue integrity of which all life functions are contingent. They believe as well that present knowledge is too scanty to warrant the acceptance of the functional theory, a position that in all likelihood may be invalidated by future disclosures of psychiatric research, disclosures which some evidently think are now in the offing.

This is exactly the position taken by Moss,[31] a psychologist who, being a medical practioner as well, is versed in the intricacies of physiological causation. According to him we call some mental disorders "functional" and psychogenic in origin simply because we are ignorant concerning their true organic causes.

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[30] B. Glueck, *op. cit.*, p. 66.

[31] F. A. Moss and T. Hunt, *op. cit.*, p. 102.

Being a materialist, Moss believes that all varieties of so-called "mental disturbances" have a physiological basis somewhere in the organism. He says, "If we had, for example, clinical tests which would measure every constituent of the bloodstream, it is not to be doubted that we would know the causes of some of the disorders which we must today class as 'functional.' If we had staining methods which could show under the microscope all the brain cell changes which occur, we might be able to list the pathological causes of some of our unknown disorders."

Proceeding from this view, Moss declares that environmental conditions, including emotional strain, the stress of modern civilization, marital conditions, etc., which others have emphasized as fundamental causes, are merely incidental and minor. The true causes reside in bacterial infections, toxins, glandular disturbances, nerve-cell deficiencies, tissue deterioration, mechanical injury, temperature disturbances, etc. These are, of course, among the known causes for *organic* psychoses. As for our present "functional" psychoneuroses and psychoses, Moss disposes of them by insisting that their causes are either partially or entirely unknown. They will, presumably, turn out to be strictly physiological in nature.[32]

The Thwarting of Dynamic Drives as Causes of Disturbance.—In Chap. V, we endeavored to delineate in broad categories the main lines of imperative human needs—the needs which apparently furnish the dynamics of man's incessant behavior. We made the point that man is required to maintain an equilibrium with a world of people and things upon whom and upon which he is absolutely dependent for the satisfaction of his driving needs. For purposes of convenience, we classified these interrelated and inseparable needs as (1) *organic*, such as food, water, sleep, rest, bodily comfort, and sexual satisfaction; (2) *social* (derived), or the need for recognition, approval, friends, success, and freedom from social scorn; and (3) *psychological*, such as opportunity for play, recreation, freedom of action, and permission to strive for personal goals.

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[32] Moss's contention appears to have met with some experimental substantiation in an announcement coming from Dr. Charles Mayo, of the Mayo clinic, to the effect that a drug is now being developed that promises to restore young dementia praecox patients to the full use of their faculties. To date, however, the drug, as used experimentally by Dr. Alfred W. Adson, has only been able to effect cures of about 3 weeks' duration (announced in an address given at the annual International Medical Assembly, Detroit, Oct. 18, 1935).

Since, in the natural order of things, man's relation to his world creates the presence of these indispensable and legitimate wants, they axiomatically become goals toward which all striving is directed. As the *Gestalt*[33] people put it, they become goal activities or *tensions demanding resolution*, not only because they are innate urges but also because of the "pull" of "psychic" and physical forces toward satisfactory "closure."

From this position, it follows that the human individual is continually thrown into a state of tension or imbalance which demands a certain amount of resolution in the form of realization of wants if personality integrity is to be maintained. Conversely, it means that maladjustments, *i.e.*, personality disturbances, are likely to accrue when these dynamic drives are *excessively* thwarted. It should not be concluded, however, that occasional and mild frustrations are likely to endanger the integrity of a typical personality. As a matter of fact, most healthy children and young people can and often do endure a remarkably extensive amount of thwarting of desires, both legitimate and perverted.

The point is that integration and adjustment depend upon a moderately *balanced* or temperate realization of needs. As the author[34] has brought out elsewhere, excessive indulgence in any variety of legitimate craving, egoistic or social, is as likely to eventuate in personality imbalance as is undue thwarting of the same. Experience patterns constituting a reasonably balanced diet of satisfaction will, of course, vary greatly in detail from person to person. But so long as conditions of contemporary civilization continue to be as subversive as they often are of individual justice in these matters, we can expect to witness the usual crop of malcontents, aberrated personalities, juvenile delinquents, and criminals.

Consequences of the Existence of Needs.—So we see that the existence of imperious human wants involves consequences. As we have said before, conflicts and frustrations are the order of the day, inescapable features of our socioeconomic order, but when endured too often or too long they become the *verae causae* of personality disorders. This is especially true in the realm of social security. Just as the physical organism disintegrates and perishes under conditions of continual deprivation and neglect, so the personal morale of an individual breaks down when constantly confronted with ridicule and hostility. There can be no gainsaying the assertion that hearty social approval, on the one hand, and overt social scorn, on the other, are two of the most influential forces for behavior determination known to psychology. Great emotional difficulties are known to grow out of real or imagined attitudes taken by persons of consequence toward sensitive individuals who court their favor.

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[33] G. W. Hartman, *Gestalt Psychology*, Ronald Press Company, 1935, pp. 202–209.

[34] L. P. Thorpe, Understanding Child Nature, *Education*, 56: 466–469, 1936. Consult also the more elaborate statement in V. E. Fisher, *Auto-Correctivism; The Psychology of Nervousness*, The Caxton Printers, 1937 Chaps. 3, 4.

In his well-known list of general causes of maladjustments in children, Jordan[35] includes first of all the item of inferiority as occasioned by "hostility, ridicule or indifference, real or imagined, on the part of adults or associates." The inferiority reaction, as well as the feeling of anxiety and resentment attendant upon failure in school, are offered by this psychologist as examples of the results of thwarting of the imperious craving for social recognition. Perrin[36] has discussed essentially the same mechanism under the caption "the prestige motive." According to this thesis much of man's striving is enlisted in behalf of the drive for special recognition. Both his morale and his degree of social adjustment are, consequently, dependent upon the extent to which he is able to realize this want.

Bagby[37] has put the matter into the following formula:

Qualities—hostile attitude—fear—defense reactions

The formula is to be interpreted thus: The individual has certain qualities to which his associates react with an unfavorable attitude. To this attitude on the part of others, the individual responds with ideas of personal inferiority and fear. The fear tension generates reduction habits of thought and conduct.

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[35] A. M. Jordan, *Educational Psychology*, Henry Holt & Company, 1933, pp. 450–451.

[36] F. A. C. Perrin, *Psychology: Its Methods and Principles*, Henry Holt & Company, 1932, pp. 191–192.

[37] E. Bagby, *The Psychology of Personality*, Henry Holt & Company, 1928, p. 100.

Incidentally the "reduction habits" have reference to the various defense mechanisms (to be discussed a little later) by means of which the troubled individual attempts to reduce his fear tensions.

Evidently, then, we may think of stresses in the form of emotional disturbances, *i.e.*, anxiety, fear, indifference, inferiority, bitterness, insecurity, etc., as the natural aftermath of an excessive damming up of the life drive for favorable recognition based on merited success. As a classical illustration of this mechanism, we can cite the case of Mildred, one of the now famous three problem children,[38] who developed both physical and social ills presumably as the result of a combination of unfortunate conditions including that of scorn (for school failures) from schoolmates and a younger sister. Assistance to academic success and removal of the obnoxious thwarting (in the form of recognition of even small successes) are said to have restored this child to practically normal personality status.

Differences in Ability to Tolerate Thwartings.—To say that the conditions of modern life are constantly frustrating the consummation of our cherished cravings is practically to utter a platitude. To some it seems as though the conditions of social justice impose upon man such a galaxy of taboos and inhibitions as is almost more than he can bear. The Freudians have long since pointed to this discrepancy between fundamental urges and social regulations as the likely cause of much neurotic behavior.[39] At any rate, we know that social sanctions, as now held, curtail in a myriad of ways the free expression of our more "carnal" desires as well as many other harmless ones. This is especially true in very conservative groups where the denial of so-called "worldly pleasures" and selfish ambitions is regarded as a virtue.

Gates[40] has grouped the principal sources of interference with basic drives into three categories: (1) other insistent but antagonistic cravings; (2) acquired habits, ideals, conventions, taboos; and (3) obstacles in the environment. Thus, one's desire to accumulate goods may clash with an equally strong desire to travel or to go to college. A wish for the approval of highly

[38] M. B. Sayles, *Three Problem Children*, The Commonwealth Fund, 1925.

[39] S. Freud, *General Introduction to Psychoanalysis*, Liveright Publishing Corporation, 1920.

[40] A. I. Gates, *Psychology for Students of Education*, The Macmillan Company, 1930, p. 217. See also C. R. Griffith, *An Introduction to Educational Psychology*, Farrar & Rinehart, Inc., 1935, pp. 640–642.

cultured people may conflict with a decided tendency toward being comfortably indifferent in matters of dress and etiquette. The ambition to strive for a professional career may be thwarted by an equally strong impulse to follow the dictates of pleasure. Incidentally, when social and organic drives conflict, it is unfortunately all too common for the latter to overwhelm its less "plebian" competitor. In short, tissue needs, being primary, tend to demand resolution even at the expense of the more cultured social or derived drives.

It is obviously a good thing for humanity that social mores and religious standards have been developed to compete with the cruder and more bestial physiological desires. Nevertheless, we see here a potential source of much frustration for those not living under the influence of "inner convictions" as to their (the social endorsements) encumbency upon man. Strong sex cravings come in conflict with moral sanctions prohibiting their expression except, of course, in harmony with definite legal and religious sanctions. The influence of early habits is illustrated by the conflict between tendencies to secure the advantage through deceit and specific honesty "sets" established in childhood.

Gates[41] has aptly summed up the consequences of the existence of these fundamental drives in the following words: "Were these urges more easily and generally controlled there would be little need for laws and courts, police and prisons, social taboos and prohibitions. The existence of these institutions and practices is perennial evidence of the conviction that all fundamental drives are not socially desirable, and that many of them must, therefore, be more or less completely diverted or held in check."

As for obstacles in the material environment which greatly hamper man's realization of his primary impulses and fundamental wants, we could mention storms, floods, droughts, sickness, death, fires, business depressions, as well as personal handicaps in the form of physical defects, undesirable personality qualities, limited intelligence, and lack of education. Any one, or a combination, of these factors is usually in the offing threatening to thwart one's efforts to realize cherished plans and ambitions. And so it goes; we are constantly kept in a state of tension, battling to make this and that adjustment, to recover from a series of disappointments, or to secure ourselves against other unforeseen interferences. It is a matter of common observation that individuals differ greatly in the extent to which they become annoyed by these frustrations of their desires. Some remain relatively unmoved by the storms of adversity, whereas others become shattered at the slightest upsets. And between these two extremes, we find that large intermediate group of so-called "average" individuals who usually occupy the "central hump of the curve"; they respond to deprivations in numerous ways, generally classified as moderate or mediocre. We think of these loosely grouped classifications in terms of emotional stability or degree of intensity of physiological reaction to inhibitions. Capacity for tolerating thwartings is decidedly a differential factor among humans and should be studied in relation to each individual and his problems. Only in this way can individual personality integrity be safeguarded.

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[41] *Ibid.*, pp. 217–219. Quoted by permission of the publisher.

Illustration of the Process of Personality Disturbance.—The process of personality disturbance as occasioned by frustration of dynamic drives may be illustrated by the diagrammatic chart shown in Fig. 18. Crane's[42] illustration of the operations involved is to the point: "The 'Personality' encounters a 'Situation' such as the winning of a sweetheart, and goes through a period of attempted adjustment, ending possibly in success and marriage. On the other hand, if failure results, the Personality is still maladjusted, as represented by the circle and rectangle in juxtaposition. The Personality may be able to effect a successful compromise so that the emotional tension is reduced through sublimation, as in the case of a disappointed girl who goes into a convent, or becomes a settlement worker or missionary.

"Again, the Situation may be too powerful for the Personality, in which case the Personality may crack. For instance, one of the writer's former students who had been a boyhood sweetheart and classmate of a girl who lived a few houses down the street, learned the week before their graduation from high school that she had betrothed herself to another senior and was to be married shortly. The disappointed youth fled the situation immediately after commencement by entraining for California where he remained so alcoholized for three months that he did not know

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[42] G. W. Crane, *Psychology Applied*, Northwestern University Press, 1932, pp. 515–518.

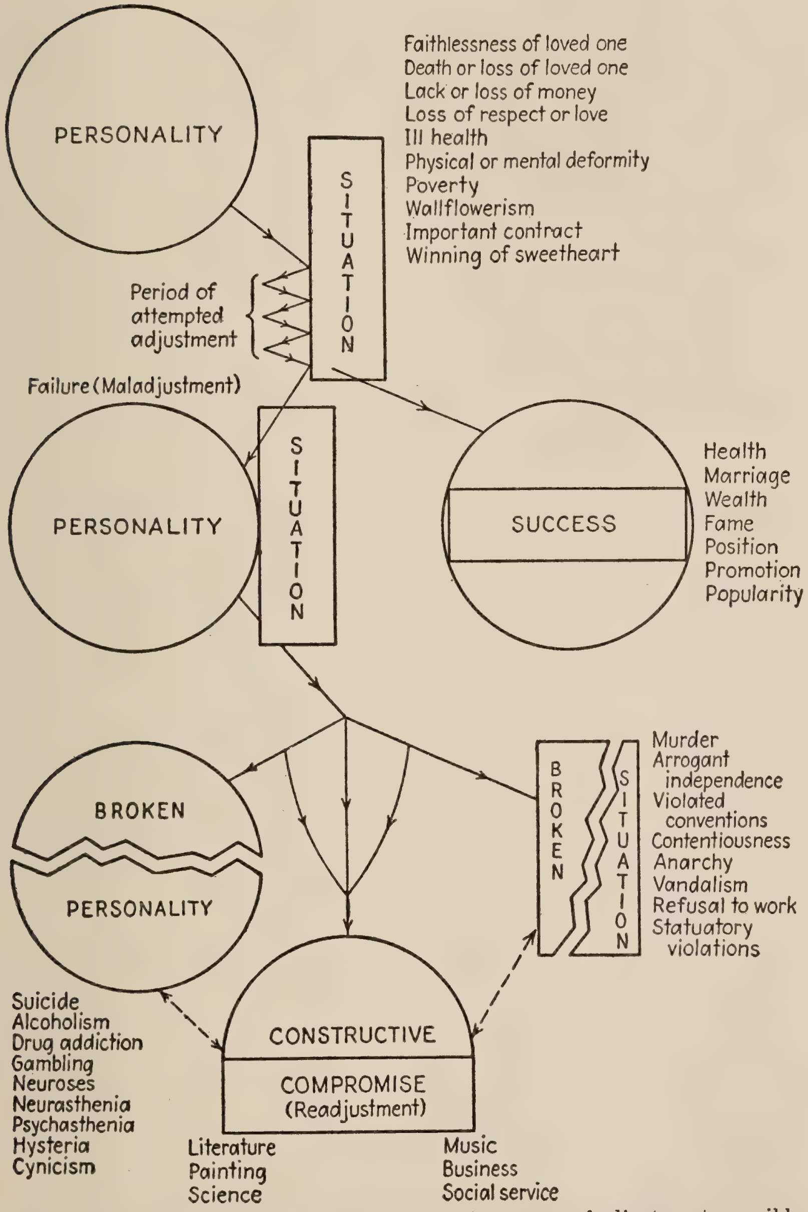
PERSONALITY
SITUATION
Faithlessness of loved one
Death or loss of loved one
Lack or loss of money
Loss of respect or love
Ill health
Physical or mental deformity
Poverty
Wallflowerism
Important contract
Winning of sweetheart
Period of attempted adjustment
Failure (Maladjustment)
PERSONALITY
SITUATION
SUCCESS
Health
Marriage
Wealth
Fame
Position
Promotion
Popularity
BROKEN
PERSONALITY
BROKEN
SITUATION
Murder
Arrogant independence
Violated conventions
Contentiousness
Anarchy
Vandalism
Refusal to work
Statuatory violations
Suicide
Alcoholism
Drug addiction
Gambling
Neuroses
Neurasthenia
Psychasthenia
Hysteria
Cynicism
CONSTRUCTIVE
COMPROMISE
(Readjustment)
Literature
Painting
Science
Music
Business
Social service

FIG. 18.—A diagnostic chart showing the various types of adjustments possible when emotional conflicts are encountered. (*Adapted by G. W. Crane, Psychology Applied, Northwestern University Press,* 1932, *p.* 516 *from K. A. Menninger, The Human Mind, Alfred A. Knopf,* 1930, *p.* 26. *Reproduced by permission of and special arrangement with Alfred A. Knopf, Inc., authorized publishers.*)

when the date arrived for the marriage. The reverse of this response may take place where the disappointed person breaks the Situation by murdering his rival or even his sweetheart." Crane goes on to describe how this young man finally managed to effect a "Constructive Compromise" thus further illustrating the possible sequences in the chart.

A careful scrutiny of Fig. 18 shows not only how major thwartings may eventuate in success or failure, how broken personalities may sometimes become reconstructed through intelligent compromise, but also what extremely unfortunate forms of both personality aberration and antisocial behavior may follow failure to adjust to difficult and thwarting situations.

The Universality of Personal Conflicts.—Although we have already made several references to that form of personality disturbance known as "conflict," a type of psychological mechanism organically associated with the thwarting of dynamic drives, it is probably of sufficient importance to warrant a somewhat more systematic and crystallized treatment. Being perhaps the major stumbling block between man and a facile adaptation to the manifold requirements of his material and social environment, conflict lies close to the heart of the problem of personality adjustment.

According to Sherman,[43] "A conflict is an unpleasant emotional attitude toward the discrepancy between opposing desires or between desires and actual attainment." That such discrepancies are bound to occur continually in the game of life is certainly obvious. As we have previously mentioned, fundamental organic and derived drives often come into sharp conflict with each other. And as for obstacles in the environment, they are always confronting the individual seeking legitimate satisfaction of his desires.

But the most inexorable barrier to the unrestrained realization of cravings, particularly those of a physiological or egoistic nature, is the relentless system of social mores which society has developed for the regulation of individual conduct and for a guarantee of the rights of the group as a unit. Sooner or later every individual must conform to the established traditions, a fact which means that he will be absolutely forbidden to do many things which he is naturally in a state of readiness to enjoy, and that he will be expected to exemplify other acts, regarded as virtuous, which he does not relish. And society makes little allowance for the presence in man of powerful cravings (fundamental needs) which naturally seek expression in more or less primitive ways; neither are unfavorable background circumstances accepted as alibis for antisocial conduct.

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[43] M. Sherman, *Mental Hygiene and Education*, Longmans, Green & Company, 1934, p. 139.

As the social order is now constituted, steps are usually taken to coerce nonconformers into acquiescence with the established mores, and in case of necessity, as a safeguard for those who do conform, such are deprived of their freedom. Thus we see that, in view of the demands of cultured living, many severe strains and inhibitions are placed upon us. In a world characterized by as much irrational behavior as ours this means that there are bound to be conflicts and many of them.

But conflicts of the kind mentioned do not necessarily portend personality disturbances. Only those resulting in distinct failure or prolonged frustration of strong incentives are likely to cause undesirable emotional upheavals. Life is, in the nature of the case, just one problem after another, the complexities of which are contingent upon the elaborateness of the environment in which one moves and has one's being. We must constantly choose between opposing desires and, as Morgan[44] says, endeavor to work out a resolution of a given conflict that will ultimately be beneficial to the personality. If happily we are able to accomplish such a utopian outcome, we can say with this writer, "Life is one grand, glorious struggle, which every normal individual enjoys as long as the struggle does not result in the capitulation of his ego. To prove that we are the masters of our environment, that the difficulties of life have only served to prepare us the better for the next conflict—that is life."

Disintegrating Effects of Personal Conflicts.—In the sense that all of us must constantly meet problems, such, for example, as choosing between a ball game and a committee meeting, between the enjoyment of outdoor recreations and the industrious pursuit of book learning, or, in the case of the child, between cheating in an examination and fidelity to mother's teaching, conflict is normal and not particularly disturbing as such. The trouble comes when the individual loses out too frequently in his subjective struggles, thus becoming the victim of the neurotic trends that are almost sure to accrue when one cannot achieve sufficient success and moral integrity to maintain a reasonable degree of self-respect (ego).

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[44] J. J. B. Morgan, *The Psychology of the Unadjusted School Child*, The Macmillan Company, 1924, p. 31. Quoted by permission of the publisher.

As Morgan[45] has brought out elsewhere, there is an important difference between conflicts with society and conflicts with self. "Acquiescence to the demands of society makes a conformer of the child, while rebellion leads to delinquency. Satisfactory adjustment of personality conflicts (conflicts with self) leads to integration and personal unity, while failure in such adjustment leads to personality disintegration." Though conflicts with self are by no means unrelated to friction with society, the former are the ones to be most feared and incidently the ones with which we are primarily concerned in the pathology of personality.

These subjective struggles may include such trying dilemmas as choosing between cherished religious convictions and patriotically going to war as a combatant, between being true to a sentimental promise made to a dying parent and enjoying the pleasures of ungodly association, between fear of danger (in the trenches, for example) and a desire to appear courageous. Nearly everyone has seen individuals deeply embroiled in such personal conflicts give way to almost tragic outbursts of emotional fervor. Upheavals of this kind may be observed at revival meetings where "sinners" frequently find relief from conflicts between ingrained religious convictions and irreligious or immoral practices.

Some Constructive Aspects of Conflict.—While it is true that both conflicts with obstacles in the environment and those of a more intimate subjective nature may result in neurotic symptoms of a sort definitely detrimental to personality integrity, *i.e.*, the development of an inflated ego requiring excessive notice or flattery for its satiation, psychologists close to the problems of mental hygiene believe that many conflicts, properly understood and attacked, are definitely useful in the development of character. In discussing what he calls "useful conflicts," Sherman[46] makes the point that they are not only necessary for normal growth but that by stimulating individuals to effort and attainment they actually furnish the drive for constructive activity. He says, "A person without conflicts of attainment may not develop to his best abilities. One who is comparatively free from conflicts usually has a complacent attitude and therefore may lack the initiative necessary for success in a competitive world."

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[45] J. J. B. Morgan, *Child Psychology*, Farrar & Rinehart, Inc., 1934, pp. 457–462. Copyright 1934. Reprinted by permission of the publishers.

[46] M. Sherman, *op. cit.*, pp. 150–151.

This is, of course, an assumption, but it may be that even conflicts involving inferiority, if not too intense, spur persons to sufficient effort to avoid failure. The senior Theodore Roosevelt and Bernarr Macfadden are supposed to be classic examples of this compensatory mechanism. They were able to face reality in spite of conflict-inviting handicaps, to maintain contacts with a stream of social activities, and to find sufficient expression for their life needs to insure satisfactory personality development as well as that quality of character usually called "stamina."

So we have come to eulogize effort and industry as ingredients in the making of men. As one writer,[47] in commenting on "conflicts, the measure of the man," puts it, "The wholesome individual welcomes an emergency (conflict); it is a challenge which calls out the best in him. Anyone can drift with the tide; but it takes a strong man to fight against the current."

We can say, then, that as far as the genetic development of character and personality are concerned, children should not only be discouraged from avoiding problems, but they should actually be taught to meet and solve their childish conflicts as these multiply with the maturation of social ability. Carr[48] has suggested the types of conflicts encountered by children and the sequences in which they are likely to appear. In this way, he has laid the basis for an intelligent program of sequential personality development in children and youth.

The types, most of which we have already touched upon in brief are (1) conflicts between individually and socially motivated desires, that is, between native egoism and learned altruism, (2) conflicts between the realization of immediate vs. remote ends, or the principle of denial of present gratification in favor of a greater and more intelligent future good, (3) conflicts between material and ideal values, such, for example, as deciding between stealing and staying by an ideal of conduct, and (4) conflicts between old established beliefs and new ways of thinking. Carr mentions here the frequent clash between practical ethics, such as those of competitive business, and altruistic religious beliefs.

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[47] J. J. B. Morgan, *Keeping a Sound Mind,* The Macmillan Company, 1934, pp. 140–141, 150–151. Quoted by permission of the publisher.

[48] H. A. Carr, *Psychology,* Longmans, Green & Company, 1925, pp. 199–202.

All these forms of conflict are inherent in the natural order of development in our type of world and must be successfully resolved by the growing individual if he is to effect a satisfactory alignment with the demands of life.

Personality Disturbances as Related to Social Surroundings.—It is evident that, in view of the way our social order is now patterned, a number of its institutions are potential agencies for the engendering of serious behavioral and personality disorders. Not that any of them would consciously contribute to personal unhappiness or social friction. On the contrary, all of them have been developed for the avowed purpose of aiding and abetting human welfare. But when we consider the paucity of precise knowledge concerning human nature and its processes, so characteristic of the laity in general, as well as the widespread indifference touching on the matter of mental-hygiene principles for the careful nurture of children and youth, it is obvious that much excessive frustration and conflict, with their consequent antisocial behavior and out-and-out crime, are almost certain to accrue right in the inner citadels, as it were, of these institutions.

Our civilization has not as yet reached the place where the bulk of its citizens give serious pause to the problems of psychological causation in child rearing or to the important principles of personality development. Most of us are all too busy with our careers, recreations, politics, social life, and problems of finance to bother about such matters.

So it comes about that schools, homes, and communities are often sources of considerable concern to those who would see the oncoming generation given every reasonable and proper facility for wholesome individual and social growth. Since these agencies are all too often the actual generators of psychological disturbances of ominous import, they too must be added to the list of background factors sometimes responsible for the etiology of personality abnormalities. Jordan[49] gives a prominent place to "bad home conditions" in his list of causes of emotional maladjustment in children. He includes such general items as (1) parental disagreements, (2) lack of affection of parents for the child, (3) parental separation, particularly if the child is strongly attached to each, (4) feeling of insecurity brought on by worry of child over family finances, (5) unfavorable comparisons with other members in the family circle, and (6) inability of child to rise to the level of family's aspirations. This is not the place to comment on these items in detail, but their import for personality pathology should be evident. Such factors have often been mentioned as motivators of delinquency and crime.[50]

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[49] A. M. JORDAN, *op. cit.*, p. 451.

In his practical discussion of the causes of emotional distress, Pressey[51] includes (1) the hazards of making adjustments to a new neighborhood or school with its attendant anxiety and misgivings, (2) school failures with their thwarting of the strong craving for recognition of merited success, and (3) social conflicts in connection with home, school, community, and church, with their frequent aftermath of inferiority, frustration, and despair. As Pressey says, " . . . continued failure is a condition that normal adjustments will not solve." Such a situation is bound to lead to the development of undesirable "defense" mechanisms. Such is causation in the behavior realm when fundamental incentives are dammed up. Success and favorable notice are the tonics that stimulate to confidence and optimism. They must be "heard," *i.e.*, realized in the flesh.

Morgan[52] believes that criminal acts are often indicative of personal conflicts engendered by unfavorable environmental conditions and stringent social taboos. He cites a number of cases illustrative of the results of somewhat specific forms of repression. The incentives to crime listed include, (1) fear, (2) reaction against deprivation, (3) gratification of secret longings, (4) desire for freedom, (5) direct breaking out of repressed impulse, and (6) disguise for worse offense. Most of these are suggestive of excessive, unnecessary, or misguided interferences with dominant life incentives. It is entirely conceivable that an intelligent and balanced recognition of the fundamental needs of the unfortunates mentioned by this writer might have resulted in a reasonably wholesome development on their part.

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[50] See for example, W. HEALY and A. F. BRONNER, *Delinquents and Criminals: Their Making and Unmaking*, The Macmillan Company, 1926.

[51] S. L. PRESSEY, *Psychology and the New Education*, Harper & Brothers, 1933, pp. 149–153. Reprinted by permission of the publishers.

[52] J. J. B. MORGAN, *op. cit.*, pp. 308–318.

Crux of the Problem of Behavior Causation.—In bringing to a close this section of our treatise on personality disorders and their probable causes, we can do no better than offer a quotation from Bassett,[53] a clinician, who, judging from her writings, enjoys unusual insight into the mechanisms of human behavior, at least at the childhood level. She concludes, "Studies of children at various age levels have indicated that the kind of personality which any individual has and the kind of behavior which characterizes his adjustments in life are largely determined during the first weeks and years of life by the way in which the child has been managed by his parents, by the emotional relationship between the different members of the family, by the environmental conditions in the home and neighborhood, and by his school experiences and relations. Thus the child's future may be permanently warped by such things as constant quarreling and antagonisms between the parents, by too much or too little affection and attention, by nagging and criticism in the home, by overindulgence and overprotection on the part of parents and relatives, by jealousy of a successful brother or sister, by the favoritisms of the parents toward individual children in the family, by bad neighborhood conditions which initiate the child into wrong habits, attitudes, and destructive experiences, by severe discipline or lack of understanding at school, by repeated experiences of failure, by wrong school placement, or by a hundred other subtle and complex causes."

III. PSYCHOANALYTIC DOCTRINES OF MALADJUSTMENT

While the psychoanalytic conception of the nature of personal conflict is considerably different from that advanced by orthodox psychology, being much more mythical and animistic, it has made sufficient contributions to practical therapy to merit a place in any dispassionate discussion of conflictful behavior. Psychoanalysis differs from psychology chiefly in that it pictures the basic causes of personality disorders in terms of antagonistic *personified forces* rather than in terms of frustration of the more prosaic but nevertheless objective *organic* and *social* needs.

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[53] C. Bassett, *The School and Mental Health*, The Commonwealth Fund, 1931, pp. 15–16.

Psychoanalytic literature is admittedly glamorous, being replete with nimble explanations and convincing subjective mechanisms, but it is still in a primitive stage of development so far as experimental techniques and objective interpretations are concerned.[54]

Nevertheless, the psychoanalytic system has rendered signal service to personality psychology by (1) calling attention to the permanent and frequently significant influences of early subjective conflicts, (2) by emphasizing the psychogenic origin of neurotic symptoms, (3) by turning the attention of academic psychologists to the importance of functional applications of knowledge, (4) by developing a practical even though sometimes questionable technique of psychotherapeutics, and possibly (5) by pointing out the "unconscious" nature of many of our substrata behavior tendencies.

The Freudian Concept of Fundamental Antagonisms.—According to Freudian theories of psychoanalysis, practically all of man's psychological troubles are due to the unfortunate existence in our modern world of inescapable antagonisms. Man in the raw, being lustful, is characterized by an intense craving for hedonistic pleasure, but the dictates of a cultured social order, being ethical and religious, refuse to tolerate much more than a fraction of such erotic expressions. And only those who, through the ministrations of the "ego," succeed in subjecting themselves satisfactorily to the expectations of the social mores, escape the disintegrating effects of the unconscious activities of repressed desires. The agencies and operations of this conflict-producing process may be described as follows:

Fundamentally, the individual is motivated to action, not so much by the demands of physiological needs and legitimate appetites, but primarily by a vital life energy called by Freudians the "libido." The strength and flow of this dynamic "psychic" force are the prime factors in the determination of ultimate personality. But this libidinal energy present in the child even before birth is essentially lustful, being the force by way of which the sexual cravings seek expression.[55]

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[54] Subsequent to a careful analysis of its involvements, Klein has written an able and convincing defense of many of the postulations of psychoanalysis, especially as expounded by Freud (D. B. Klein, Psychology and Freud: An Historico-critical Appraisal, *Psychological Review*, 40: 440–456, 1933).

[55] See S. Freud, *op. cit.*

In order to account for the ilicit and perverse operations of the libido, it was necessary for Freud to invent that other cardinal principle of psychoanalysis called the "unconscious" mind. On this thesis, the mind (a psychic entity) is accorded three levels: (1) the *conscious*, or awareness-of-mental-content mind (of structural psychology fame), (2) the *preconscious* mind, or seat of such memorized materials as may readily be brought into the range of consciousness through associative processes, and (3) the *unconscious*, that major part of the mind which houses those unrecognized mental processes supposedly responsible for so much of man's thinking and acting.

The unconscious mind, then, is the home of the libido. Here is where the *repressed* as well as a legion of other antagonistic, infantile, primitive, and immoral desires are stored away, not to enjoy quiescence, but to strive ceaselessly for expression.

Nature of the Freudian Struggle between Good and Evil.—Another category of personified concepts, stressed by Freud in his later writings and essential to an understanding of his system, is the one explanatory of conflict in terms of the so-called "id," "ego," and "superego." The *id* is the unconscious, primitive, striving component of the personality. It is synonymous with man's craving for erotic (sexual) pleasure, selfish indulgence, and general tendency toward carnal gratification. Being thus inherently bestial, *i.e.*, motivated by the "pleasure principle," the persistent id is suggestive of the Christian theological doctrine of inborn sin—the basis of the great controversy between good and evil. It is obvious that the unconscious id is the native habitat of the dynamic libido.

The *ego*, or the awareness of the *I* (self), is said to be both conscious and, to some extent, unconscious. To the Freudians, it is that aspect of the personality which recognizes the demands of social sanctions and civil laws. It is also the agent responsible for the persistent efforts of the personality to maintain its social prestige. Being thus governed chiefly by the "reality principle," it naturally acts as a mediator between the strivings of the more sordid id, with which it is in contact, and the requirements of the group mores (reality). The ego provides the rational content to behavior, endeavoring to repress into the unconscious all subversive, antisocial ideas except those passed by the "censor" (ideals and attitudes) as harmless.

As for the *superego*, it is said to be the governing principle created by moral, ethical, and religious teachings. Being imbedded in the unconscious, where it can watch the evil id, it supposedly strives to influence the ego to increased vigilance. The superego is obviously the "conscience" of popular parlance. As Holt[56] expresses it, "The 'still, small voice' is the popular but just designation for the protest of the semi-dominant upper self when, in revery, fancy, or imagination, lower impulses have succeeded in intruding on the field of consciousness."[57]

Implications for the Development of Personality.—From all this, it is easy to see from the psychoanalytic point of view what the child is up against when it comes into the world. During intra-uterine days, the infant finds full satisfaction for all primary cravings and erotic pleasures. With the coming of the birth event, it is introduced to a conflict between its natural desires and conditions under which they may be satisfied. And to make matters worse the child is gradually deprived of full and free expression of its vegetative satisfactions. It must inhibit erotic pleasures associated with nursing, defecation, and mother care in general. In the nature of the case, this means decided inhibitions of the activities of the insistent id or pleasure goal. Owing to the restraints of civilized life, perhaps a major portion of this libido-driven primitive energy must be repressed back into the unconscious there to foment until such time as it can reach the level of consciousness in distorted form. The individual's only hope seems to be the development of a sufficiently strong ego to reconcile the pleasure demands with the requirements of reality.

So we see that conflicts are inevitable. The suppressed tendencies will not be denied; they vie continually for release in one guise or another. As Morton Prince[58] has so brilliantly demonstrated, conflict is the logical outcome when two strong impulses involving affective states are in direct antithesis to each other. Here, then, is the psychoanalyst's explanation for the genesis of neurotic disorders. Antagonistic desires produce conflicts which in turn generate "complexes" (persistent organized and emotionally toned systems of ideas), and, as the sequence goes, the latter eventuate in neurotic symptoms such as fantastic dreams, hysterical spells, phobias, obsessions, compulsions, headaches, anesthesias, and even dissociated conditions of the personality.[59] As Prince[60] has also shown, unconscious complexes may become sufficiently organized and integrated among themselves to resist the censorship of the conscious mind, thus forming a second or submerged (dual) personality.

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[56] E. B. Holt, *The Freudian Wish*, Henry Holt & Company, 1915, p. 16.

[57] For more amplified accounts of Freudian psychoanalysis, see S. Freud, *New Introductory Lectures on Psychoanalysis*, W. W. Norton & Company, Inc., 1933, and other works by the same author. For good condensed descriptions, consult R. S. Woodworth, *Contemporary Schools of Psychology*, Ronald Press Company, 1931, Chap. 5, and W. Healy, A. F. Bronner, and A. M. Bowers, *The Structure and Meaning of Psychoanalysis*, Alfred A. Knopf, Inc., 1930.

[58] M. Prince, *The Unconscious*, The Macmillan Company, 1921, p. 454.

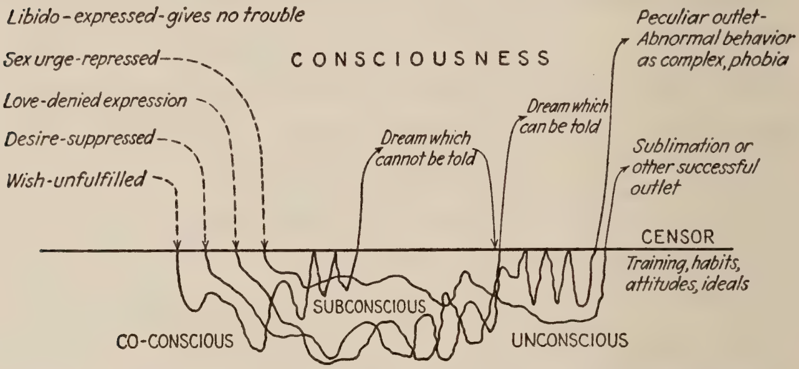
Libido-expressed-gives no trouble
Sex urge-repressed
Love-denied expression
Desire-suppressed
Wish-unfulfilled
CONSCIOUSNESS
Dream which cannot be told
Dream which can be told
Peculiar outlet-Abnormal behavior as complex, phobia
Sublimation or other successful outlet
CENSOR
Training, habits, attitudes, ideals
SUBCONSCIOUS
CO-CONSCIOUS
UNCONSCIOUS

FIG. 19.—Schematic diagram illustrating Freud's notion of the results of suppression of desire. (*From A. Ralston and C. J. Gage, Present Day Psychology, J. B. Lippincott & Company,* 1931, *p.* 86.)

In the light of these considerations, we can understand Coriat[61] when he writes, "The human mind is ever on the alert to protect itself through repression into the unconscious from powerful memories and anxieties, but sometimes this repression oversteps itself and leads to all sorts of neurotic disturbances." This, then, is the creed of the psychoanalyst as far as the origin of the neuroses is concerned. They belong to the class of psychogenic disorders and are the natural aftermath of an inherent duality or "polarity" (between pleasure demands and social restrictions) over which the individual enjoys only limited control. The processes concerned as well as the sequence of events as described by psychoanalysts are pictured schematically in Fig. 19.

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[59] I. H. Coriat, *Abnormal Psychology*, Kegan Paul, 1910, p. 36.

[60] M. Prince, *The Dissociation of a Personality*, Longmans, Green & Company, 1906.

[61] I. H. Coriat, *Repressed Emotions*, Coward-McCann, Inc., 1920, p. 4.

The Adlerian Doctrine of the "Inferiority Complex."—It is evident that the crux of psychoanalysis, in any of its forms, is its conception of the nature of personality. It is primarily interested in ways and means of preventing personality disturbances and of reconstructing such individuals as are already in the throes of neurotic expressions. To Freud this means a satisfactory relationship between the demands of the id and the repressive tendency of the ego, especially in infantile days when the individual is called upon to make the treacherous transition from the *autoerotic*, or bodily gratification stage, to the egocentric *narcism* days of self-love, and thence to the more mature and id-denying stage of *object love* or attachment to parents.

To Freud's illustrious pupil and critical competitor, Jung,[62] to whom the libido or life urge is moral and antisexual as well as sexual, the essence of personality integrity is assured through opportunity to make progress toward rational and moral goals. To Jung, neurotic tendencies express themselves in irrational efforts to regress back to the security of childhood. His interest lies in providing a wholeness to personality that will insure a confident and progressive outlook on life.

But it is to Alfred Adler,[63] Freud's other great pupil and later rival, that we owe the conception of that popular personality disturbance, the "inferiority complex." Around this concept as a kernel, Adler has built his whole system of "individual psychology" with its theories of the causes and cures of neuroses. According to this point of view the principal driving force or libido of life is the desire for personal superiority or self-assertion over others. That this drive is doomed to early frustration is evident when we consider the infant's helplessness and the omnipotence of his parents. Thus enters antagonism with the odds greatly against the child. Again we witness a struggle between the libido (including the cooperation of the unconscious) of the child and the conditions under which it is forced to assert itself. The result is the acquirement of an unconscious inferiority complex with all its potentialities for maladjustment.

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[62] C. G. Jung, *Analytical Psychology*, Dodd, Mead & Company, Inc., 1916.

[63] For original treatises by Adler see, Study of Organ Inferiority and Its Psychical Compensations, *Nervous and Mental Disease Monograph*, 24, 1917, and *The Neurotic Constitution*, Dodd, Mead & Company, Inc., 1917.

Adler[64] has stated the case in one of his more recent works in the following words: "One realizes that the beginning of life is fraught with a more or less deep feeling of inferiority when one sees the weakness and helplessness of every child. Sooner or later every child becomes conscious of his inability to cope single-handed with the challenges of existence. This feeling of inferiority is the driving force, the starting point from which every childish striving originates. It determines how this individual child acquires peace and security in life, it determines the very goal of his existence, and prepares the path along which this goal may be reached."

The Concept of Compensation for Inferiority.—Adler has made much of the complications that develop when the child's situation is aggravated by the presence of actual or imagined physical defects. Such a state of affairs, so he says, eventuates in a bitter struggle and the frequent "strangulation of social feelings," not to mention irrational attempts at compensation for the recognized defects. This mechanism of compensation, which has become a commonplace in psychology, is one of the corner stones of Adler's structure of personality. It represents the efforts of the tortured "soul" to neutralize its feeling of inferiority. When rightly directed, this atoning mechanism may result in laudable achievements such as those exemplified by Steinmetz or Stevenson, both of whom suffered from irreparable physical handicaps.[65] Demosthenes and Beethoven are further illustrious examples of heroic figures who made constructive compromises to unfavorable physical defects.

As Adler explains, trouble in the form of personality pathology enters when the individual, possessed of an intense and exaggerated thirst for power and dominance, finds his "psychic" compensation in antisocial behavior and diplomatic subterfuge. This frenzied drive for impossible superiority leads inevitably to manifestations of neurosis especially when reality is ignored in favor of fictional goals. Under such conditions, "An uninhibited striving for power is capable of producing degenerations in the psychic development of the child, an exaggerated drive for security and might, may change courage to impudence, obedience into cowardice, tenderness into a subtle treachery for dominating the world. Every natural feeling or expression finally carries with it a hypocritical afterthought whose final purpose is the subjugation of the environment."[66]

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[64] A. Adler, *Understanding Human Nature*, Doubleday, Doran & Company, Inc., 1927, p. 70. Copyright 1927 by Greenberg, Publisher, Inc.

[65] See also M. Fishbein and W. A. White, *Why Men Fail*, D. Appleton-Century Company, Inc., 1928, Chap. 8.

The craving for power is, thus, the Adlerian conception of the libido of life. If adjusted to reality and geared to the requirements of social standards, it may lead to satisfaction through legitimate achievements, but if unintegrated it is destined to lead to indulgence in more or less harmful "dynamisms" (compensatory mechanisms), in this case efforts to find relief from strain through overcompensation for real or imagined inferiority.

Evidence for the Existence of "Organ Inferiority."—Owing to Adler's emphasis upon "organ inferiority" as the physical basis for the appearance of feelings of inadequacy, the extent to which neurotic temperament is associated with physical defects has been of great theoretical interest to psychologists. Some efforts have been made to ascertain, by quantitative methods, the degree of relationship obtaining between these two factors. In a doctoral dissertation, Faterson[67] attempted to correlate, among other factors, the relationship existing between height-weight ratio and inferiority complex and between physical defect scores and inferiority attitudes. The inferiority-complex scale used was the one devised by Heidbreder[68] from suggestions contained in Adler's writings. Correlation coefficients for height-weight ratio and inferiority were negligible being .03 ± .03 for freshman men and .11 ± .03 for freshman women. But figures for "total defect scores" vs. inferiority attitudes ran from .16 ± .03 to .30 ± .03.

In commenting on these findings, Paterson[69] (under whose supervision Faterson carried out her problem) remarks that they constitute in a sense "a positive verification in general of Adler's thesis." He suggests further that if a perfectly reliable instrument of measurement for inferiority were available, it is entirely likely that "an even more striking relationship would be in evidence, when pronounced neurotics are compared with normal subjects."

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[66] A. Adler, *op. cit.*, p. 74. Copyright 1927 by Greenberg, Publisher, Inc.

[67] H. P. Faterson, *Some Implications of the Normal Inferiority Complex*, Doctor's Dissertation, University of Minnesota, 1928.

[68] E. F. Heidbreder, The Normal Inferiority Complex, *Journal of Abnormal and Social Psychology*, 22: 243–258, 1927.

[69] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, pp. 230–231.

Criticisms of the Psychoanalytic System.—When one reads the intriguing literature of psychoanalysis, it is easy to become impressed with its apparent superiority over psychology in the matter of finding and correcting the personality ills of neurotic people. However, in spite of its practical contributions, for which we should be ready to show appreciation, it is to a disconcerting extent invalidated by shortcomings concerning which we should be aware. The most serious count against the whole system is that it is not based on *verifiable objective techniques* such as a sound science must utilize. A method that depends on introspective data, even though backed by rich clinical experience, and that eschews the exact techniques of controlled experimentation is bound to come out with unreliable data.

In the second place, as Shaffer[70] has pointed out, the methodology of psychoanalysis employs too many "*personified fictional concepts.*" They perpetrate the age-old fallacy of attempting to make entities of psychological *processes.* Thus they practically personify the libido, the id, the ego, the censor, and other comparable concepts. Some of these are said to do battle with each other, with still others as the battleground. These animistic concepts are naturally very popular being almost "dead ringers" for the well-known theological constructs of "will," "sin," "conscience," etc.

Many other objections have been advanced and may be found in works devoted to that purpose.[71] We shall content ourselves by mentioning further the very questionable concept of an "unconscious" mind and the introduction of mystical ideas of inherent "polarities" or dualisms. Then too, we might well be dubious about "unconscious racial heritages," "fixed dream symbols," and "inverted oedipus complexes," not to mention infant "genital" stages.

We believe that it would be the better part of wisdom to cast our lot with the testimony of more prosaic, but nevertheless substantial, objective evidence. The warning sounded by Chapman and Counts[72] on this point is apropos, "As methods of explanation or, more accurately, of classification, it is easy to bandy these words (psychoanalytic concepts) around and, in the face of the complex problems of human behavior, to feel a false security. In the hands of popular writers, and, at times, in the hands of those who claim to be psychologists, these terms have been employed as explanations to such a degree that the standards of proof in psychology seem to be even lower than those found in theology. These concepts have a proper place; they may aid clear thinking, but, unless used with great discrimination, they may 'lay the intellect to rest on a pillow of obscure ideas.'"

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[70] L. F. Shaffer, *The Psychology of Adjustment,* Houghton Mifflin Company, 1936, pp. 422–423.

[71] See J. Jastrow, *The House That Freud Built,* Greenburg, Publisher, Inc., 1932.

IV. MECHANISMS OF ATTEMPTED PERSONALITY ADJUSTMENT

Deviations in Behavior as Efforts at Adjustment.—In considering the implications of the topic "mechanisms of attempted adjustment," we shall proceed on the thesis that adjustment mechanisms are characteristic and usually indirect ways in which thwarted individuals seek to satisfy their desires, legitimate or perverted. Everyone encounters frequent thwartings and the majority of people no doubt experience personal conflicts of one variety or another, hence mechanisms designed to effect adaptations to stress-producing situations are manifestly imperative even in normal living. And since all of us attempt to maintain a satisfying alignment with the requirements of a complicated social order by way of these mechanisms, they should not be thought of as symptoms of personality disorder except as they eventuate in such bizarre extremes of behavior as are usually associated with definite psychological abnormality. In other words, adjustive mechanisms of the kind that are about to be described are common to both normal and abnormal behavior, the latter being merely an extention and intensification of the former.[73]

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[72] J. C. Chapman and G. S. Counts, *Principles of Education*, Houghton Mifflin Company, 1924, p. 152.

[73] This view is advanced by a number of writers. See, as examples, C. C. Fry and H. W. Haggard, *The Anatomy of Personality*, Harper & Brothers, 1936, p. vi; J. J. B. Morgan, *The Psychology of Abnormal People*, Longmans, Green & Company, 1928, Chap. 15; and V. E. Fisher, *Introduction to Abnormal Psychology*, The Macmillan Company, 1929, Chaps. 6, 13.

In this sense, the responses of definitely deranged individuals are but amplified counterparts of those displayed by their better organized fellows (normals), differing in degree (with some exceptions) rather than kind. All persons frequently find themselves frustrated in their efforts to consummate the demands of their basic needs and are thus motivated to make circumventions of the inhibiting social regulations. Individuals differ greatly in the facility and diplomacy with which they can surmount these obstructions, either by direct attack on reality or by way of the mechanisms under examination. Thus, we shall think of normal people as individuals who have achieved relatively moderate and satisfactory "mechanism" adjustments and of psychopathological individuals as unfortunates who have made very maladaptive use of these processes.

Since our major interest focuses here on an analysis of the nature and causation of personality disturbances, we shall not attempt to indulge in more than a brief discussion of the better known defense and escape mechanisms, or "dynamisms," as the psychoanalysts sometimes call them. Thorough accounts of this very intriguing topic may be found by consulting works devoted to such matters.[74] The same may be said of the field of psychotherapeutics, a subject which can only be included incidentally in this treatise.[75] We should like to mention as well that we are primarily interested in those psychological aspects of personality disturbance which touch on the development of neurotic and psychotic trends rather than such as have reference to social delinquency (crime).[76] The latter field is interesting and important but does not come within the scope of the present discussion except as it is related to the pathology of personality in general.[77]

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[74] We would recommend, for example, M. Sherman, *Mental Hygiene and Education*, Longmans, Green & Company, 1934, Chaps. 8, 9, 12; J. J. B. Morgan, *The Psychology of the Unadjusted School Child*, The Macmillan Company, 1936, Chaps. 5–15; L. F. Shaffer, *The Psychology of Adjustment*, Houghton Mifflin Company, 1936, Chaps. 6–10; and J. E. W. Wallin, *Personality Maladjustments and Mental Hygiene*, McGraw-Hill Book Company, Inc., 1935. For the prevention point of view consult, P. M. Symonds, *Mental Hygiene of the School Child*, The Macmillan Company, 1934.

[75] See chapters in above works devoted to therapeutic techniques.

[76] That social delinquency (behavior maladjustments) and neuropsychotic diseases are not necessarily related in the causal sense has been to some extent demonstrated. Among 20,000 cases in the Cook County Psychopathic Hospital, Mooney and Witmer found only 10 who had been committed to the Institute of Juvenile Research for such conduct disorders as stealing, incorrigibility, violent temper, and the like. These had been

Origin and Classification of Adjustment Mechanisms.—It should be noticed that the adjustment mechanisms under consideration, while now current coin in practically all psychology texts, are primarily psychoanalytic concepts. They are the dynamisms which supposedly mediate between the demands of the id and the permissions of the ego; they are the *unconscious* mechanisms by means of which the ego maintains its prestige in the face of guilty desires and slips of conduct.[78] So we must admit that, although modern psychology attacks these as well as other problems from a strictly objective point of view, eschewing the mysteries of the unconscious,[79] it is decidedly indebted to psychoanalysis not only for some of its terminology, but for many practical suggestions along mental-hygiene lines as well.

In classifying adjustive mechanisms from as objective a viewpoint as possible, it has become the style to group them in terms of the characteristics of the responses displayed. Thus Shaffer[80] suggests (1) adjustment by defense (compensation, rational-

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examined at least 2 years (ages ten to nineteen) before commitment, and in four of them the psychiatrist had "recognized a marked personality difficulty and described the patient as psychoneurotic or a psychopathic personality." The final dementia-praecox symptoms of all 10 were said to be accentuations of earlier aberrations. They were evidently not the aftermath of behavior maladjustments (M. Mooney and H. L. Witmer, Ten Problem Children Who Later Became Psychotic, *Smith College Studies in Social Work*, 3: 109–150, 1932–1933).

[77] The delinquency aspects of personality disturbances are treated in, C. Burt, *The Young Delinquent*, D. Appleton-Century Company, Inc., 1925; W. Healy, *Mental Conflicts and Misconduct*, Little, Brown & Company, 1917; and W. Healy and A. F. Bronner, *Delinquents and Criminals*, The Macmillan Company, 1926. See also a study by H. A. Lane, The Education of the Young Delinquent, *Educational Trends*, 2: 30–36, 1933.

[78] That the idea of unconscious adjustments is attested to by some legitimate psychologists may be seen by turning to, M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, pp. 321–326; and L. F. Shaffer, *The Psychology of Adjustment*, Houghton Mifflin Company, 1936, p. 162.

[79] For a short critical discussion see A. I. Gates, *Psychology for Students of Education*, The Macmillan Company, 1930, pp. 237–242. For a more extended account, one should read K. Dunlap, *Mysticism, Freudianism and Scientific Psychology*, The C. V. Mosby Company, 1920.

[80] L. F. Shaffer, *op. cit.*, pp. 143–145.

ization), (2) adjustment by withdrawing (negativism, phantasy, retrogression), (3) adjustments involving fear and repression (phobias, repression), (4) adjustment by ailments (hysteria and other forms of psychoneuroses), and (5) persistent nonadjustive reactions (anxiety, worry, "nervousness"). Morgan[81] has found the following classification convenient: (1) forgetting reality—daydreaming and fantasy, (2) ignoring reality—the schizophrenic disorders, (3) retreat from reality—regression, (4) distorting reality—compensation and rationalization, and (5) facing reality. Other groupings may be just as good or even superior to these, but begging the reader's indulgence we shall present our discussion on the basis of a combination of the two.

Forgetting Reality—the Fantasy Mechanism.—One of the easiest and most satisfying forms of substitute satisfaction available to the thwarted individual is found in the realm of fantasy or daydreaming. Here the tortured individual may find a happy outlet for his feelings of insufficiency and insecurity. Having been balked, frustrated, and defeated in his attempts to secure satisfaction in the realm of reality he finds solace and peace for his "aching heart" in the domain of fancy. In his reveries, he easily gains the greatly desired social approval, friends, achievements, and wealth so consistently denied him in the harsh world of concrete obstacles.

Conquering Hero.—One of the most common varieties of this soothing mechanism is called the "conquering hero" or "fantasy of grandeur" type. As the title suggests, it enables the subject to regard himself as a great hero in battle, on the football field, in a storm at sea, or perhaps as an eminent musician, scholar, surgeon, or gangster. Illustrative of this mechanism is the story in which a much harassed (through failure) schoolboy imagined himself the valiant conqueror of a band of wild Indians. Though wounded and deprived of his courageous comrades he held off the relentless redskins until reinforcements arrived—all in the delightful realm of fancy. And incidentally, the first to offer praise and adoration was his now-contrite schoolteacher who had so cruelly relegated him to the ranks of the stupid.[82]

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[81] J. J. B. Morgan, *The Psychology of the Unadjusted School Child,* The Macmillan Company, 1924, pp. 63–200.

[82] R. H. Wheeler, *The Science of Psychology,* The Thomas Y. Crowell Company, 1929, p. 190.

Suffering Hero.—The reverse of this common form of daydreaming is the one in which the distressed individual depicts himself as the victim of tragic episodes—the "Suffering Hero" type. Who hasn't "gotten even" with allegedly harsh parents or companions by imagining himself a runaway, or, better yet, the victim of wild beasts, of bandits, or of the crushing wheels of a railroad train! And who has not secretly enjoyed contemplating the remorse and heart-rending grief of those responsible, because of their cruelty, for the sorry plight in which he consequently found himself?

Such are the fantasy flights of the thwarted—the unhappy individuals who, through failure to secure needed satisfaction by way of legitimate concrete channels, resort to the soothing domain of unreality where pleasures may be had for the asking. However, it should be made clear that when indulged in moderately for occasional thwartings this mechanism is entirely harmless, indeed, it is common to all normal individuals. It is a universal balancing process by way of which all of us satisfy our natures and reduce our tensions. It may even serve as imaginative planning for future accomplishments.

The danger arises when fantasy is used as a continual substitute for reality, for overt efforts to meet the practical requirements of our none-too-benign world. When the individual constantly resorts to the gentle retreat of his daydreams, he sets up a vicious circle which obviously has no end. Finding reality increasingly distasteful and the dream world correspondingly more satisfying, he loses himself in the distinctions between the two. Thus we see that, beginning with the mild daydreams of normal living, one may under undesirable circumstances gradually become more introvertive (introspective, fanciful, and sensitive), and may even reach that state of emotional apathy and reality exclusion called schizophrenia (dementia praecox), perhaps with the delusions of grandeur and persecution characteristic of the paranoiac form of that psychosis.[83]

Identification.—A form of fantasy in which people afflicted with feelings of insecurity and inferiority find much relief from stress is the mechanism of *identification,* a process by means of which the individual assumes the role of, or identifies himself with, some figure of importance or of superior attainment. Thus, the boy of meager accomplishments or barren surroundings imagines himself to be Buffalo Bill, Frank Merriwell, or perhaps Clark Gable. By identifying himself with these characters, he vicariously fights Indians, thwarts train robberies, wins football games, becomes a hero, or enjoys the luxuries and excitement attendent upon being a movie star. Perhaps a more virtuous youth might experience the lofty sentiments of the Christian martyr or the altruistic reverberations of a Lincoln.

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[83] A. I. Gates, *Psychology for Students of Education,* The Macmillan Company, 1930, pp. 224–225.

When properly controlled and temperately indulged, this mechanism of indirect satisfaction is obviously harmless and may, in the case of temporarily impoverished students and others, prove stimulating. As Wheeler[84] says, it may permit an individual "to feel some of the importance he ascribes to his superiors." But identification must not be permitted to become a substitute for fact and action. Danger arises when adjustments are made in fancy only and to the exclusion of concrete achievements. The mechanism becomes pernicious when a subject uses it as an habitual retreat from the practical necessities of real life. As Jordan[85] warns us, "The passage from a condition such as we have just mentioned [examples of identification] to a condition in which the insane individual identifies herself as in one case with the Empress Louisa, wears yachting clothes, and lives the part, and believes that she is the real Empress, is not as abrupt as we had formerly believed."

Distorting Reality—the Mechanism of Rationalization.—The word "rationalization" enjoys various meanings, but, as used in abnormal psychology, it has reference to the tendency of humans to give plausible reasons for inconsistent behavior. It is one of the most common and convenient "defense" mechanisms in man's repertoire of stress-resolving tricks. Since we are all expected to conform to social usage, frequent failures to do so must be explained in ways designed to safeguard the ego and our standing in the eyes of the group. Thus, we are usually motivated to offer alibis when apparently caught in situations suggestive of stupidity on our part. The salesman upon failure to make a prospective sale declares that he was very dubious about the customer's credit anyhow, and the young businessman when questioned about the consistency of purchasing such an expensive automobile announces that it will, in the nature of the case, bring prestige to his business.

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[84] R. H. Wheeler, *op. cit.*, p. 192.

[85] A. M. Jordan, *Educational Psychology*, Henry Holt & Company, 1933, pp. 463–464.

The rationalizer protects himself from the necessity of acknowledging the *true* reasons for his acts by offering what he hopes will sound like *plausible* reasons. Since this blame-escaping process is actuated by the fundamental drive for social approval, it is often perpetuated so subtly as to escape the recognition of its own author, and it tends to make him blind to all evidence damaging to his "reasoning." In short, one has an "axe to grind" and all logic must conform to its requirements.

Projection.—A popular form of rationalization is implicit in the so-called "mechanism of projection." Zachry[86] has called projection "the tendency to put the blame for one's conduct on circumstances that are beyond one's control." This is evidently an ego-satisfying process explanatory of our penchant for blaming others or obstacles for our shortcomings. Thus the clarinetist glares at his reed when embarrassed by a shrill squeek, the football player limps off the field when benched for making a stupid play, the mother blames her son's misconduct on ill health rather than on her own unintelligent management, and the teacher indulges in the favorite indoor sport of blaming her pupils's poor showing on heredity.

All these are buck-passing mechanisms and illustrate well the universal tendency of individuals to relieve their emotional tensions by "blaming the incidental cause," rather than fundamental inefficiency. Man must "save his face" before his fellow men, so he deludes himself that he is not at fault.

There is another form of projection, described by Shaffer[87] as the process by which individuals perceive in other persons the traits or attitudes in which they themselves feel inferior. He illustrates the mechanism by reference to an episode occurring in connection with foster-home placement. In this instance, the foster mother became so shocked at the discovery of autosexual practices on the part of her charge that she came to loathe him as a degenerate. Subsequent to the disclosure that this good lady had never achieved sexual adjustment herself, the interpretation was made that she *projected* her own maladjustment into the boy's problem. Be that as it may, the lad had to be transferred to another home.

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[86] C. B. Zachry, *Personality Adjustments of School Children*, Charles Scribner's Sons, 1929, p. 175.

[87] L. F. Shaffer, *op. cit.*, p. 170.

Sour Grapes.—Still another form of rationalization is the *sour grapes* mechanism of fox-fable fame. Just as the fox saved his pride by declaring that the unattainable grapes were sour and thus undesirable, we ease our disappointment upon failing to realize desired goals by announcing that we are better off as it is, success might not have been good for us. The unsuccessful lover insists that he is not disturbed since women are just like streetcars—one comes along every few minutes—and, besides, beautiful women are "dumb." Working girls disparage a college education by concocting the inference that college women are all highly impractical. Poor individuals salve their feelings by asserting that money is the root of all evil or that it is much more restful to live in a simple shack than to endure the formalities and responsibilities of a mansion on the avenue.

All of these utterances are rationalizations, tension-resolving mechanisms invented by unsuccessful "souls" seeking indirect satisfaction for thwarted desires. That their balancing intent is hardly apparent to their authors is obvious, but this fact does not free them from the deficiency of being primarily pseudo adjustments.

Sweet Lemon.—The same may be said of the antithetical "sweet lemon" or Pollyanna mechanism by way of which one is motivated to insist that no matter what calamity befalls it might have been worse—is best for one after all. A man may have drawn a "lemon" (lacking in certain qualities) for a wife, but he insists that she is "sweet" (in terms of other qualities) nevertheless. One who is unfortunate enough to purchase a faulty car declares that it is the best car on the market anyhow. Thus, we find a pleasant retreat from reality by manufacturing excuses for our lack of judgment.

Although rationalization in all its forms is indicative of weakness in that its subterfuges are a distortion of reality, it does serve to stave off embarrassments and to preserve for the individual a minimum of social prestige. It too is a normal mechanism indulged in by all, especially children and adolescents who are usually hard put to maintain the approval of their elders.

In its ordinary manifestations, it is not considered a disturbance of personality, but when the individual becomes so convinced of the verity of his "reasoning" that he actually deceives himself, he is in the throes of those obviously (to normals) false beliefs called "delusions." Incidentally, rationalizations, when continually and excessively utilized as substitutes for the truth, are likely to shade by imperceptible degrees into these systematic delusions. It is here that the danger lies. As Hart[88] explains, " . . . the lunatic who is firmly convinced that his wife is seeking to murder him, will distort the meaning of everything which happens until it is brought into harmony with his dominating delusion, and capable of being used as a pseudo-logical prop."

Atoning for Reality—the Mechanism of Compensation.[89]—Most interesting and essential to an understanding of personality organization is the mechanism of *compensation*, a device by means of which all of us endeavor to atone for our feelings of inferiority.[90] As the logic goes,[91] every individual, being harassed by a competitive society, develops at some time or other convictions that he is at a social disadvantage. These feelings may be based on either real or imagined inadequacies of a physical, mental, social, moral, or economic nature, but in any case they are said to eventuate in "intolerable tensions," demanding an avenue of escape. Being unable to stand the strain of the unfavorable comparison which his inferiority causes, the individual seeks for a scheme that will hide his defects from himself and others.

The plan unwittingly adopted is one designed to bring real or imagined satisfaction in the form of relief from the conflict involved. And so we witness compensatory behavior—the effort to make up for personal deficiencies by endeavoring to win esteem and recognition through the development of qualities or skills along other lines where success and prestige are obtainable—as the avenue of escape.[92] Thus the youth with a frail physique may endeavor to become a scholar, all the while condemning athletics as the pastime of plebians; the homely girl cultivates a winsome disposition to atone for lack of pulchritude; the bully develops grand and supercilious airs as a compensation for feelings of fear and cowardice; the miss with a monotonous singing voice strives to become an artistic pianist. As Vaughan[93] has said, "An individual who realizes that he is dependent in one field sets out to conceal that incapacity by training his ability in another direction."

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[88] B. Hart, *The Psychology of Insanity*, Cambridge University Press, 1920, p. 86.

[89] We have already discussed this concept in connection with Adler's theories of conflict but shall here present a few additional points from a more general angle.

[90] For a criticism of the Adlerian point of view, see V. E. Fisher, *Introduction to Abnormal Psychology*, The Macmillan Company, 1929, Chap. 6. For an extended and somewhat involved account of this topic, read E. S. Robinson, A Concept of Compensation and Its Psychological Setting, *Journal of Abnormal and Social Psychology*, 17: 383–394, 1923.

[91] J. J. B. Morgan, *The Psychology of Abnormal People*, Longmans, Green & Company, 1928, pp. 538–541.

Compensation may, and no doubt does, sometimes take the direction of supreme efforts to excel along the specific line of defect and in spite of handicaps. Demosthenes, the orator, is said to have overcome a serious case of stuttering, and all of us have heard of Theodore Roosevelt's valiant fight against early ill health. Both Beethoven and Edison excelled in lines ordinarily requiring acute auditory sensitivity in spite of partial deafness. Cases of failure would greatly outnumber these spectacular examples, but they do make impressive illustrative material touching on balancing mechanisms by means of which the emotional equilibrium of the personality is maintained.

Classification of Types.—Clarifying classifications of types of compensatory actions have been suggested by Griffith,[94] Sherman,[95] and others. These include (1) overcompensation, (2) identification, (3) disparaging remarks, (4) malingering, (5) daydreaming, and (6) regression. Brief illustrations of these are in order.

Overcompensation.—As the name suggests this mechanism involves overdoing in an effort to atone for weaknesses. As Hadfield[96] has written, "We overcompensate when, in order to hide our complex, we go to the other extreme. A lady may spontaneously protest her devotion to her husband so strongly that one knows there is domestic trouble." This process is further illustrated by the story of the puny little man who became a Western desperado. According to the psychiatrist who later (subsequent to his capture) studied his case, he chose the career of a bandit as a compensation for his irrepressible desire to show himself and others that in spite of his unattractiveness he really possessed superiority.[97]

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[92] V. E. Fisher, *op. cit.*, pp. 99–105.

[93] W. F. Vaughan, The Psychology of Compensation, *Psychological Review*, 33: 467–479, 1926.

[94] C. R. Griffith, *An Introduction to Educational Psychology*, Farrar & Rinehart, Inc., 1935, pp. 649–653.

[95] M. Sherman, *op. cit.*, Chap. 8.

[96] J. A. Hadfield, *Psychology and Morals*, Robert M. McBride & Company, 1923, p. 47.

Identification.—When an individual feels that he is not capable of attaining to distinction through his own efforts, he will make an effort to become associated with some exclusive firm, club, fraternity, or other desirable organization. In this way, he can bask in the reflected prestige of "his" and "our" institution.[98] Thus the salesman speaks of "our" firm, or the college student boasts about the exclusiveness of "his" fraternity. In each instance, the compensating individual has raised his stock by identifying himself with a superior organization. The same is true of those who boast of having illustrious relatives and acquaintances.

Disparaging Remarks.—We have all met the kind of person who takes pleasure in belittling the achievements, qualities, and possessions of others who are obviously his social superiors. This form of balancing mechanism is evidently intended to satisfy a feeling of inferiority through the naïve process of verbal aggrandizement. As his opponents' stock goes down through verbal onslaught, the critic's own prestige axiomatically rises (?) accordingly. This is the method of disparaging remarks so common to individuals who feel the inferiority of their possessions and social connections.

Malingering.—This is a more serious type of compensatory behavior in which a subject will attempt to escape the odium of inadequacy or fear through the avenue of feigned illness or physical inferiority. As Dorcus and Shaffer[99] have defined it, malingering is a process of creating infirmities that can be used as plausible excuses for failure. The school girl who feigns a headache can often induce her teacher to excuse her from school and the boy who simulates a stomachache is sometimes successful in evading the daily chores. We have all heard of the functional disorders (among soldiers) which grew out of this mechanism during the World War.[100]

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[97] I. J. SANDS and P. BLANCHARD, *Abnormal Behavior*, Dodd, Mead & Company, Inc., 1923, pp. 39–40.

[98] W. F. VAUGHAN, *The Lure of Superiority*, Henry Holt & Company, 1928.

[99] R. M. DORCUS and G. W. SHAFFER, *Textbook of Abnormal Psychology*, The Williams & Wilkins Company, 1934, Chap. 4.

Daydreaming.—By the use of this device, the unsuccessful individual can easily find the thrill of achievement in the fantasy world. He can compensate for his thwartings through an imaginary and temporarily gratifying outlet. Robinson[101] has shown how children find relief from strain in make-believe play, and Lehman and Witty[102] have advanced the argument that children compensate through real play. It may be that the great appeal of the motion picture is based on the opportunity which it affords for gaining thwarted ends through vicarious experience.[103] Perhaps the movies are one of our greatest compensating avenues.

Regression.—When a mature individual has been so excessively frustrated in his efforts to make satisfactory adjustments to his needs that he resorts to a return to a more childish level of living, we say that he is exemplifying the *regression* mechanism. As Wells,[104] in this thorough discussion, puts it, "Regression takes place when fundamental trends of the organism are replaced by trends less fundamental." Patients suffering from dementia praecox are sometimes characterized by this atavistic (backward-turning) mechanism. Spectacular cases of this sort have been reported.[105] In its mild aspects it is illustrated by the intentional helplessness often displayed by neglected children, the tendency of adults to indulge in juvenile forms of recreation or imaginary ills, and the contentment with which some timid persons lean on the protection afforded by religion.[106] Regression has been styled the "Old Oaken Bucket delusion" because of its suggestion of the superior joys of childhood days.[107]

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[100] W. S. Taylor, A Hypnoanalytic Study of Two Cases of War Neurosis, *Journal of Abnormal and Social Psychology*, 16: 344–355, 1921–1922.

[101] E. S. Robinson, The Compensatory Function of Make-believe Play, *Psychological Review*, 27: 429–439, 1920.

[102] H. C. Lehman and P. A. Witty, Playing School—A Compensatory Mechanism, *Psychological Review*, 33: 480–485, 1926.

[103] P. A. Witty and H. C. Lehman, The Compensation Function of the Movies, *Journal of Applied Psychology*, 11: 33–41, 1924.

[104] F. L. Wells, Mental Regression; Its Conceptions and Types, *Psychiatric Bulletin*, 9: 445–492, 1916.

[105] W. McDougall, Four Cases of "Regression" in Soldiers, *Journal of Abnormal and Social Psychology*, 15: 136–156, 1920.

[106] F. L. Wells, *op. cit.*

[107] L. F. Shaffer, *op. cit.*, p. 200.

From what has been said we can conclude that in the case of mechanisms which are not socially undesirable, compensations are actually a constructive type of adjustment to the "inferiority complex." They frequently lead to notable achievements and to stimulating feelings of personal worth. In fact, properly directed, compensation is a preferred form of treatment for attitudes of insecurity. On the other hand, when carried to excess in the form of criticism of others, malingering, and regression, this type of adjustment mechanism can become pernicious. Many of its victims are numbered among the completely deranged.

Retreating from Reality—Functional Dissociation.—In this field of abnormality, which belongs properly under the title "hysteria,"[108] we witness some of the most amazing forms of escape from conflict known to the science of psychology. It is the behavior area in which we see the oppressed organism resorting, without foreknowledge on the part of the individual concerned, to grave physical symptoms which automatically preclude the need for action. This mechanism is illustrated by the case of the little girl who was so wrought up over a coming examination that on the way to school she became very ill, suffering from vomiting spells, thus necessitating her return home for the rest of the day.[109]

Assuming that her fears were the true cause of the trouble, we have here a case of hysteria or functional dissociation in which part of the organism developed a disability which very conveniently relieved the individual of the necessity of going through with the dreaded performance. And according to clinicians, such an escape mechanism usually occurs without intermediary thinking—without insight on the part of the subject as to what is going on. This type of retreat from intense conflict is especially spectacular in that physical disorders in the form of fainting spells, functional paralysis, temporary blindness, and vomiting of psychogenic origin occur *without benefit of underlying organic pathology.*[110] This means that as a result of intense psychological conflict a man's *physical functions* may become seriously disturbed.

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[108] For a thorough study of hysteria the reader should see P. Janet, *The Major Symptoms of Hysteria*, The Macmillan Company, 1920.

[109] M. W. Curti, *Child Psychology*, Longmans, Green & Company, 1930, pp. 321–323.

[110] E. S. Conklin, *Principles of Abnormal Psychology*, Henry Holt & Company, 1927, Chap. 8.

War Neurosis.—This type of conflict was very much in evidence during the World War when men were torn by conflicting desires to appear patriotic in the eyes of their fellows and irrepressible desires to get back home to loved ones and safety. Many suffered from hysterical symptoms in which the outstanding feature was dissociative anesthesia for certain motor and sensory functions. Hysterical paralyses as well as functional blindness and defects of hearing were frequently encountered. Such cases might appear to be quite deaf, baffling every trick to detect malingering, and yet be disturbed at night by the crying of infants or the sighing of the winds. These are the famous cases of war neurosis, known to most people as "shell shock."[111] Incidentally, many of the symptoms, paralyses and blindness included, *disappeared when the termination of hostilities removed the original stimulus for the disturbance.* But these mechanisms illustrate the tragic extent to which conflict-torn organisms can and do go in quest of peace without loss of ego.

Dual Personality.—Even more interesting perhaps is that form of dissociation known as dual or *split personality.*[112] Like all forms of personality disorder it comes on very gradually, moving by imperceptible degrees from mild to serious stages of expression. All of us are many-sided creatures of moods and differing social- and moral-behavior patterns, for we are obliged, for example, to act differently in church from our fun behavior at a picnic, and to deport ourselves in harmony with professional as well as home requirements. But in the case of those of us who are normal (we hope), these fluctuations do not involve disturbance of the integrity of the personality, there is no actual breakup of the personality integration, only a temporary domination of behavior by one set or pattern within the whole.

With the coming of intense conflicts and fears, these tendencies toward differentiation among broad patterns of action may become intensified to the end that such typically hysterical symptoms as anesthesias, obsessions, amnesias, somnambulisms, paralyses, fugues, and mutism develop. These are usually interpreted by their victims as indicative of serious organic disease or as symptoms of impending insanity. Actually, they are amplifications of antecedent tendencies in that direction. They are conversion forms of hysteria induced by excessive strain and are said to be carried on by the subconscious mind without being wished or consciously induced.[113]

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[111] W. S. Taylor, *op. cit.*

[112] For an extensive treatise, see M. Prince, *The Dissociation of Personality*, Longmans, Green & Company, 1906.

When, in the course of further conflict development, suppressed elements or organized systems of potential activity, opposed to the established personality, become constellated into a secondary personality, we have that remarkable phenomenon called "alternating" or "split personality" which is so glamorously exemplified in Stevenson's hypothetical case, Dr. Jekyll and Mr. Hyde. Specialists speak of a dual personality as a "double mind working to contrary purposes." Persons possessing split personalities are said by psychiatrists to be suffering from a disintegration of the original personality integration and are regarded as abnormal. Suppressed elements, viewed by the original personality as undesirable, at least as unwarranted, are said to have become sufficiently organized to form a rival and, usually, an antagonistic personality. The subject may fluctuate from one of his personalities to the other without either recognizing the nature of its rival.

Volumes have been written on this fascinating topic and the student is advised to peruse some of them, particularly the works of Dr. Morton Prince[114] who has worked with cases involving as high as five competing personalities (Miss Beauchamp).

The most famous cases on record include the case of Miss Beauchamp, studied by Prince,[115] Felida X and Leonie B reported by William James,[116] Mr. Hanna investigated by Jastrow,[117] and Patience Worth of literary fame whom Cory[118] describes. These outstanding cases illustrate the extent to which rival systems can develop in the human personality. They suggest the extreme importance of preventing the appearance of deep-seated emotional conflicts and strongly antagonistic tendencies. As Cory[119] warns, in such a conflict "each (system) elicits all the associations that are congenial to it. If the nervous system has a high degree of stability the strain may be borne. . . . But if an instability exists the strain, in time, undermines the integrative forces . . . a bifurcation, or division takes place."

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[113] See *ibid.*, pp. 275, 306, 457.

[114] In addition to references already cited one might well read M. Prince's *The Unconscious*, The Macmillan Company, 1921, especially Chaps. 18–20.

[115] M. Prince, Miss Beauchamp—The theory of the Psychogenesis of Multiple Personality, *Journal of Abnormal and Social Psychology*, 15: 130–133, 1920.

[116] W. James, *Psychology*, Henry Holt & Company, 1892, pp. 210–212.

[117] J. Jastrow, *The Subconscious*, Houghton Mifflin Company, 1906, pp. 394–403.

[118] C. E. Cory, Patience Worth, *Psychological Review*, 26: 397–406, 1919.

Facing Reality—the Attacking Mechanism.—It is generally agreed by mental hygienists that the most satisfactory way to meet a conflict or difficulty of any kind is to face it squarely. Evasion does not augur well for ultimate success, since "Any type of compromise is fraught with disadvantages and as the compromises increase in complexity one encounters greater and greater chances of losing in the struggle."[120] Our discussion thus far has certainly attested to the verity of this statement. We can conclude, then, that the most constructive and wholesome of all modes of adjustment is the open-minded attack on the causes of difficulty, especially when such an approach is carried out with intelligence and deliberation. Instead of resorting to fantasy for his successes, one may achieve them "in the flesh" in the real competitive world of concrete people and things; and in place of rationalizing his shortcomings, one may regard them as stimuli to greater effort in behalf of a cherished goal. By "facing the music," a man may win his own self-respect and that of others.

But many forms of direct attack are, of course, unwholesome and destructive. Outbursts of temper, flagrant disobedience, and overt attacks on enemies are positive reactions but are certainly not conducive to wholesome adjustment. Actions of this kind, when aided and abetted by strong emotional upheavals, are likely to be subversive of adaptation, leaving matters worse than they were. Such tactics are suggestive of strikes, mob movements, and conflicts between nations, all of which add materially to the world's stock of woe. Nevertheless, when properly controlled, an attacking method is admittedly superior to the compromises of retreats from reality. At least it promises much better success in the quest for unified personality development.

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[119] C. E. Cory, The Problem of the Individual, *Journal of Abnormal and Social Psychology*, 16: 378, 1922.

[120] J. J. B. Morgan, *The Psychology of the Unadjusted School Child*, The Macmillan Company, 1924, pp. 63–64. Quoted by permission of the publisher.

In his elaborate study of the attitudes which teachers tend to take toward the various behavior responses of children, Wickman[121] made the rather significant discovery that the very attacking mechanisms which clinicians extol as being productive of progress and development (when properly guided) are frowned upon by the majority of classroom teachers as being inimical to good order and the dignity of the school; also that the identical withdrawing tendencies, such as unsocialness, suspicion, depression, sensitiveness, dreaminess, and cowardice, which clinicians rate high as incipient symptoms of acute introversion are apparently regarded by teachers as being harmless and even desirable forms of adjustment to school life.

Teachers have made the very natural mistake, owing no doubt to practical considerations, of evaluating behavior traits in terms of good order and recognition of authority, whereas clinicians think in terms of the effects of present tendencies on personality growth *in the long run.* Teachers must maintain reasonable order, but from the mental-hygiene angle they are obviously not justified in favoring unhealthful *withdrawing* behavior, no matter how helpful to their plans, while at the same time engendering continual conflict in the lives of the better adjusted youngsters who respond by direct attack. An intelligent reversal of this process would be a fine thing for those concerned. It would put the school in a position better to accomplish its mission as a builder of wholesome men and women.

V. SUMMARY AND PRACTICAL IMPLICATIONS

In presenting material relating to the causes of personality disorders and the psychological mechanisms of attempted adjustment, we have endeavored to indicate the present status of knowledge in this field. Various viewpoints, including those offered by the ingenious psychoanalysts, have been reviewed. We have proceeded from the point of view that psychological knowledge of this kind, being to quite an extent subjective, is always in a state of flux, therefore demanding a nondogmatic treatment which recognizes the temporary nature of the interpretations offered. It is all too true that abnormal psychology is lacking in tangible objective evidence that can be presented in substantiation of its postulates. It depends to a disconcerting extent upon clinical data, which data obviously lend themselves to a variety of interpretations. It must be admitted too that the many interesting case studies with which texts are replete, while certainly valuable and illustrative, often sound, in part at least, as though they were presented in a way designed to clinch points and prove the causal relationships under discussion.

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[121] E. K. Wickman, *Children's Behavior and Teacher's Attitudes*, The Commonwealth Fund, 1928, especially Chaps. 5–9.

Nevertheless, we have sought to show, in terms of such light as we have on the subject, that personality disturbances, be they mild or serious, are in the end the natural aftermath of excessive thwarting of the fundamental life drives toward a balanced satisfaction of egoistic, social, and psychological needs. A temperate realization of these imperious needs leads, theoretically at least, to the development of a well ordered and unified personality while undue frustration frequently eventuates in serious conflicts with society and with self. Tensions attendant upon these struggles, if not alleviated, carry the organism along toward eventual disintegration in the form of neurotic and psychotic pathology.

The Life Economy of Adjustment Mechanisms.—We have described the major mechanisms of attempted adjustment which, according to psychonanalysts and conventional psychologists alike, are the avenues of defense and escape for harassed organisms not sufficiently virile to "stand the gaff" of vigorous adjustment to the demands of reality. These mechanisms, while psychological in nature, have been shown to have a definite relation to the physiological activities of the individual. As Kempf[122] has stressed, the nervous system, which controls the glands as well as the external muscles of the body, is at the mercy of the autonomic system. Unsuccessful adjustments to life set up autonomic tensions which in turn initiate compensatory behavior designed to relieve the stress. Adjustment mechanisms are not superficial processes independent of physiological operations; they are important regulators of tissue needs, *i.e.*, of man's physiological, as well as psychological, status.

We can conclude, then, that we should do all we can to provide our children with as purified and simplified an environment as possible to the end that sound, disintegration-resisting habits of life be built up. We should endeavor to provide the growing organism with at least a modicum of those basic satisfactions without which it apparently cannot thrive. We should ground it in personal security and nourish it with stimulating experiences in the hope of engendering those wholesome dispositions from which moral conduct and personality integrity emerge. Perhaps it would not be too much to suggest that the home, the school, the church, and all members of society unite in a concerted and intelligent effort to promote the science of personality engineering to the further end that human welfare be materially advanced.

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[122] E. J. Kempf, *Psychopathology*, The C. V. Mosby Company, 1920.

Questions for Stimulating Thought and Discussion

1. Why it is so difficult to determine who is and who is not "normal" psychologically? Explain. What criteria must a scientifically disposed individual use in deciding such a question?
2. How can we ascertain whether personality disturbances are of biological or social origin? To what extent does our knowledge of the physical basis of psychological pathology throw light on this question? Defend the position that seems to you most tenable.
3. Offer evidence from everyday life experiences that personality disturbances may logically be regarded as "functional" in nature. What is the flaw in such a view from the strictly biological angle? What do you think about it? Why?
4. Refute, from evidence available, the criticism that the notion of personality aberrations as being caused by excessive thwarting of basic drives is entirely too mechanistic to apply to human life. How does the phenomenon of "conflicts with self" tie up with the principle of "fundamental life needs"? How is such conflict avoided?
5. Trace the psychological cause and effect relationships as they develop in personal conflicts. To what extent can conflictful behavior be controlled by environmental regulation? Defend the idea that social planning can engineer desirable individual personality.
6. In fairness to psychoanalysis, how would you meet the objection that its theory and practice are both highly unscientific and thus, for the most part, useless? Show how psychoanalytic contributors have thrown light on the problem of wholesome personality building.
7. Show how the childhood "inferiority complex" may become either an asset or a liability in the development of adult personality. How can the natural tendency to "compensate" for a feeling of inadequacy be capitalized advantageously in this process?
8. Indicate and elaborate upon the inherent organic relationship that must obtain between the fact of "fundamental life needs" in man and the familiar phenomenon of "mechanisms of attempted adjustment."

Does this prove that man is a mechanical instrument or does it argue for the presence of purposive behavior? Defend your view.

9. In the face of the fact that a moderate use of psychological escape and defense mechanisms is known to be normal and natural, why do psychologists continually warn students and adults alike concerning them? Isn't it true that the behavior patterns of out-and-out "mentally" diseased persons are totally unlike those of normal individuals? Discuss this question.
10. With life as cruel as it often is, how can we justify the contention that the avenue to personality adjustment lies in facing and attacking reality? What desirable personality qualities would you say are engendered by way of "facing the music"? What are the implications of the "retreating mechanism"?
11. Do you believe that understanding parents who are willing to provide wholesome home conditions can ward off the devastating effects of excessive "escape mechanism" behavior on the part of their children? Explain in detail how this would be done. Remember that personal conflicts can easily arise in children of well-to-do parents.
12. Show how the home, the school, the church, and other social institutions might unite their forces in an intelligent effort to guarantee the personality integrity of their children and youth. Is it conceivable that such a program could eliminate psychological disorders? Be careful to stay by facts and thus avoid wishful thinking.

Recommended Readings

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CHAPTER IX

PERSONALITY ADJUSTMENT AND INTEGRATION

I. THE MENTAL-HYGIENE MOVEMENT

In the immediately preceeding chapter we endeavored to point out the diverse and disconcerting forms of personality disturbance to which modern man is apparently subject. We sought to show both the causes of these unfortunate maladjustments and the abortive mechanisms of attempted readjustment to which they so often lead. In the present discussion, we are primarily interested in discovering such ways and means of alleviating these expressions of human woe as may be available. In other words, the situation, as depicted in our presentation of personality aberrations, naturally motivates us to a search for such therapeutic measures as bid fair to prevent the multiplication of inadequate life adaptations and which appear promising for the restoration to normal living of those already in the grip of emotional and what are commonly called "mental" disorders.

The Meaning of Mental Hygiene.—This is the much discussed field of *mental hygiene*—the phase of applied psychology and psychiatry concerned with the prevention and correction of such personality disturbances, be they mild or serious, as are amenable to control and cure. On the positive side mental hygiene is essentially concerned with a search for factors favorable to an allround unified development of personality. As Taylor[1] has aptly said, " . . . the idea of mental hygiene is the development of the best mental condition in everyone." And realizing the many involvements of the word "mental," this author defines it, in this connection, as meaning "not merely the intellectual powers, but all the processes, affective, emotional, volitional, which in popular speech are comprehended under the term 'mental.'"[2] Mental hygiene has reference, then, to the inculcation in every individual of such habits and attitudes as will logically lead to a happier, richer, and more abundant life. Like physical hygiene, which seeks to prevent the appearance of disintegrating organic illness, mental hygiene is intended to forestall those incipient disorders which may lead ultimately to the various psychological diseases.

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[1] W. S. Taylor, *Readings in Abnormal Psychology and Mental Hygiene*, D. Appleton-Century Company, Inc., 1926, p. 743.

[2] The student should realize that involved terms like "mental," which

Origin and Objectives of the Mental-hygiene Movement.—The story of the rise of the mental-hygiene movement sounds like fiction. It seems that a young man by the name of Beers, who had for years been incarcerated in hospitals due to a serious mental disorder, eventually recovered and, after writing a fascinating book touching on his experiences,[3] subsequently gave his life to the cause of improving conditions for those who had undergone similar sufferings. His first tangible undertaking was the founding in 1908 of a committee on mental hygiene in the state of Connecticut. This movement eventuated in the following year in the organization of the National Committee for Mental Hygiene, an institution which has since become world wide in scope and which has issued valuable literature in the form of *Proceedings*[4] and a quarterly periodical *Mental Hygiene.*

Much invaluable information covering behavior problems, the preservation of mental health and happiness, the recognition of individual needs, and the influence of environmental factors on the cultivation of a sound personality has been disseminated through the avenue of these publications. In contemplating these developments, one is led to wish that others of Mr. Beer's caliber might recover from experiences suitable for making possible such subsequent endeavors.

The work and influence of the National Committee for Mental Hygiene have been broad in scope and far reaching in effects. Its work may be said to have evolved from humanitarian activities to medical endeavors and, in turn, from medical endeavors to social reconstruction. Beginning as a humanitarian program

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term has primary reference to a nonsubstantive and etherial entity as contrasted with the physical properties of the body, have frequently crept into popular use and have become veritable trade names. Thus when we speak of mental hygiene or mental disorders we shall have reference to popular classifications and not to critical meanings.

[3] C. W. Beers, *The Mind That Found Itself,* Doubleday, Doran & Company, Inc., 1908.

[4] *Proceedings, First International Congress on Mental Hygiene,* International Committee for Mental Hygiene, vols. I and II, 1932.

designed to ameliorate the living conditions of those who had already succumbed to serious mental disorders, it endeavored to insure more humane treatment, better living quarters, more intelligent commitment laws, and a more tolerant attitude on the part of the general public toward those unfortunates. It sought to break down the earlier practice of dealing with mental patients from a legal angle and thus did much to promote the psychological viewpoint in the handling of such patients.

Following these developments, which soon led to a recognition of the transcendent importance of skill in the treatment of aberrated individuals from a medical standpoint, the committee turned its attention to the study, treatment, and rehabilitation of those suffering from disorders having an organic pathological origin—the physiogenic diseases. Much progress has been made in this line of endeavor, but as Morgan[5] reminds us, " . . . medicine has failed to throw much light on the great mass of disorders which have now been classed as functional disorders." Medical men have been prone to seek for definite physiological factors, such as poison, bacterial infection, physical injury, or cell disintegration as necessary antecedents of disease, psychological or physical. Disorders for which no such organic background could be found—the functional diseases—have thus always been baffling to the doctors.

Thus, there developed what we might call the social phase of mental hygiene. It was recognized that a variety of symptoms of maladjustment might easily appear as a result of social taboos, the excessive frustration of primary life needs, and personal conflicts attendant upon the necessity of making innumerable social adjustments. Naturally this aspect of mental hygiene opened up a vast field for the introduction of child clinics, school guidance organizations, and psychological service in general for the education of teachers, parents, and the laity. Accordingly, the National Committee has, for the last fifteen years or so, been extending its activities to include this area of mental-hygiene endeavor.

In commenting upon the comprehensiveness of the program now being attempted by mental-hygiene agencies, Schwesinger[6] writes, "The earlier concepts of psychotherapy and prevention have now been enlarged to include a philosophy of life. The 'good life' is one that is not just negatively good in being free from complaint but, positively good in self-realization, in living at one's best. . . . The values of life stressed by mental hygiene and progressive education are character, social well-being, self-expression or the attainment of one's great possibilities, and the like." Such, then, is the idealistic objective of mental hygiene as a social movement. It proposes to promote the development of desirable personality traits and to assist all in effecting a harmonious adjustment to the practical requirements of life.

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[5] J. J. B. MORGAN, *The Psychology of Abnormal People*, Longmans, Green & Company, 1928, p. 596.

[6] G. C. SCHWESINGER, *Heredity and Environment*, The Macmillan Company, 1933, p. 437. Quoted by permission of the publisher.

Mental Hygiene as a Field of Practice.—Although it is true, as Shaffer[7] points out, that positive and constructive mental-hygiene practice is the duty of parents, teachers, employers, and everyone else who makes vital contacts with others who are significantly influenced thereby, the practice of mental hygiene, in its more complicated aspects at least, is a professional field requiring the services of educated and experienced specialists. This is particularly true in dealing with the problems of those unfortunate individuals who are definitely maladjusted.

There has been considerable discussion as to the technical education and clinical experience necessary to efficient practice in this field. Some regard medical training as absolutely imperative to success while others, pointing to the social and psychological nature of many personality disorders, emphasize the importance of a rich knowledge of the causes and mechanisms of functional disturbances. Obviously these antithetical positions are motivated by equally divergent views relating to the etiology of so-called "mental and emotional disorders." If we take the position advanced by Moss and Hunt,[8] that mental disorders are for the most part "rooted in anatomy, physiology, pathology, and chemistry," it is apparent that mental hygienists must be medical men schooled, for example, in a knowledge of infectious processes, the control of alcoholism, and the prevention and treatment of such organic involvements as are induced by syphilitic and toxic infections. As Moss and Hunt admit, under these conditions, mental hygiene would be practically synonymous with preventive medicine, and the medical practitioner would be the ideal mental hygienist.

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[7] L. F. Shaffer, *The Psychology of Adjustment*, Houghton Mifflin Company, 1936, pp. 436–438.

[8] F. A. Moss and T. Hunt, *Foundations of Abnormal Psychology*, Prentice-Hall, Inc., 1932, pp. 258–262.

However, as these and other writers readily acknowledge, there is another and supremely important side to the mental-hygiene program—the social sphere of life where so many serious behavior disorders and personality break-ups apparently have their origin. No practitioner who is not richly informed in the field of psychological processes can hope to cope with the intricate personal problems which this field presents. It is well known that an appreciable percentage of the patients coming to the average physician are suffering to some extent from psychological disturbances (usually hysterical symptoms suggestive of organic diseases) of a nature beyond the ability of the medical doctor to handle successfully, *i.e.*, unless he has enjoyed psychological or psychiatric training.[9] And some have insisted that it should be made as unlawful for him to attempt such practice as it now is for the psychologist to try to practice medicine.

Be that as it may, we see that mental hygiene has various aspects. Its medical angles are closely tied in with social problems of a nature difficult to handle, as the control of syphilis illustrates,[10] and behavior problems are frequently associated with factors pertaining to health, heredity, morals, social laws, home conditions, and various other influences. These considerations suggest that the preferred education for successful mental hygiene practice might well include medicine, general psychological theory (including a knowledge of personality disturbances), and a thorough study of both the organic and functional mental diseases. Psychiatrists and medical men who have specialized in a study of the various psychoses and psychoneuroses, represent an approach to this ideal, but they, too, are often seriously lacking in a knowledge of the psychological mechanisms of abnormal behavior, especially in their milder manifestations. In short, being medical men, psychiatrists are very capable in dealing with institutional cases of both the organic and the functional variety, but are somewhat out of their sphere when dealing with the innumerable cases of incipient personality disorders growing out of social problems and unhealthy emotional experiences as found in home, school, and community life.

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[9] See L. F. Shaffer, *op. cit.*, p. 438.

[10] F. A. Moss and T. Hunt, *op. cit.*, p. 259.

It appears, then, that while the best service, other factors being equal, would normally be rendered by the mental hygienist who is at the same time a physician, a psychiatrist, a psychologist, and a social worker, there is room in the varied fields of human-behavior problems for the ministrations of specialists. Physicians may properly care for those in need of medical services, whenever possible sending cases of a psychoneurotic or psychopathic nature to the psychiatrist. The psychiatrist will, of course, be in a position to render maximum service in the case of patients suffering from serious mental disorders, be they physiogenic or psychogenic.

As for the nonmedical psychologist, he should be prepared to serve as mental hygienist in that large realm of personality disturbances which includes emotional maladjustments of all kinds—conflicts with society, conflicts with self, abnormal fears, tantrums, stuttering, inferiority feelings, functional illness, abortive attempts at readjustment, and numerous other forms of friction incidental to man's efforts at alignment with the requirements of his own nature as well as those of the social order. There is a great field for the psychologist in private practice whether he specializes in problems of measurement and guidance or in psychotherapy as practiced by legitimate psychology. As the public becomes educated to the importance of maintaining mental health, opportunity for consulting psychologists will no doubt increase rapidly.[11] Thus far such service has been offered largely in connection with schools and colleges.[12]

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[11] See, for example, such articles as, W. S. Casselberry, The Psychologist in Private Practice, *The Psychological Exchange*, 4: 57–58, 1935; and, Opportunities for the Psychologist in Private Practice—A Symposium, *The Psychological Exchange*, 3: 151–158, 1934.

[12] An example of the important service available from psychologists may be seen in the Thought Control Clinic instituted by the Boston Public Dispensary. Here cases of an hysterical nature involving functional gastric and intestinal disorders, nausea, palpitations, tremors, paralysis, and the like are referred to the Thought Control Clinic where they are given practical instruction and experience in relaxing from their tensions, in substituting wholesome thinking for morbid apprehensions, and in replacing neurotic habits with constructive endeavors. The clinic seeks to remove unhealthy symptoms by making the patient "master of himself" (W. Rhoades, Group Training in Thought Control for Relieving Nervous Disorders, *Mental Hygiene*, 19: 373–386, 1935).

Aspects of a Comprehensive Hygiene Program.—In suggesting the various phases of an intelligent program for the conservation of mental health, it is apparent that it must, in all logic, include those factors having a significant bearing on an individual's adjustment within himself and with his concrete world. This means, of course, that every major aspect of his life, be it physical welfare, economic conditions, social situations, or mental habits, attitudes, and ideas, as suggested by Taylor,[13] must be taken into consideration. Other factors, as vocational plans, aesthetic and recreational interests, and moral and religious philosophy, must be taken into account as well in any comprehensive program designed to insure a maximum of personality integrity. And since mental hygiene is concerned primarily with the prevention of disorders in all these realms of functional living, it seeks to control the conditions under which the organism responds to stimuli and to evaluate the effects upon personality of such conditions as accrue in any given case. Mental hygiene is a social engineering enterprise having for its objective the regulation of personal and social experience in such areas of life as are considered in the following paragraphs.

1. *Physical Health as the Foundation of Adjustment.*—In view of the intimate and inseparable nature of the relationship obtaining between the two phases of the human organism popularly called physical and mental,[14] it is obviously the part of wisdom to make sure that all remedial physical handicaps to mental or emotional balance are corrected. Much clinical evidence, not to mention Adler's theory of "organ inferiority," indicative of the devastating effects on personality integrity of physical defects, has been amassed. Thus the current practice of giving every problem-case child a thorough physical examination is more than justified.

Examples, illustrative of the indirect effects on morale of physical handicaps could easily be multiplied. The author recalls a high-school boy who was sent to his clinic because of failing school work and rebellious behavior. The administration of various physical and psychological tests indicated that, while the lad was intellectually above normal, his lack of auditory acuity was such as to preclude his learning much from his teachers unless he sat on the front seat in class. But, as is so often the case, he had endeavored to hide his defect by occupying a seat many rows back. As a result of this situation, both educational and emotional problems of no small import had arisen in his life.

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[13] W. S. Taylor, *op. cit.*

[14] We have in a previous section of this book offered a somewhat technical discussion of the mind-body relation. In the present connection we have thought it advisable to adopt the popular phraseology, thus avoiding involvements.

2. *Prevention of Social Conflicts through Social Education.*—Since the social aspect of practical life is one of the most involved as well as being perhaps the most important for human happiness, it is imperative that a mental hygiene program include every possible advantage for the inculcation of desirable social standards and for the accumulation of satisfying social experience. Social health must be safeguarded through social education which takes cognizance of preferred principles for making personal adjustments, family adjustments, school adaptations, community alignments, and facile adaptations to the numerous social obligations and privileges which we all encounter daily. It is the duty of both home and school to emphasize the importance of the process of socialization. As Thorndike and Gates[15] advocate, children should be taught "to know and get along with each other, to respect each other's wants and abilities, to assist each other, to cooperate, to follow, as well as to lead."

As we evaluate the social health of an individual, we must do so in the light of the school experiences which he has encountered. But if we follow the logic of the genetic approach we must give an ear to Morgan's[16] warning when he reminds us, "The important thing is not so much the social conditions under which he has lived, but how these conditions have affected his personality." It is not the bad companions, the poverty, the vicious home conditions, or other such social influences, as such, that exert influences for weal or for woe on the developing social individual, but rather the way he has responded to them. Mental hygienists must watch the reactions of children and youth to various social-stimuli patterns.

3. *Maintanance of Mental Health through Continual Adaptation.*—We think of the mentally balanced person as one char-

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[15] E. L. Thorndike and A. I. Gates, *Elementary Principles of Education*, The Macmillan Company, 1929, p. 42. Quoted by permission of the publisher.

[16] J. J. B. Morgan, *op. cit.*, pp. 597–598.

acterized by wholesome thoughts and moods, fine emotional control, a confident outlook on life, and a capacity for making harmonious adjustments of all kinds. Conversely, the mentally unhygienic individual is thought of as one who harbors irrational fears, phobias, worries, grudges, fantasies, who worries about real or imaginary defects or limitations, and who responds to problematical situations by resorting to naïve escape and defense mechanisms of all kinds. The task of a mental hygiene program in this connection becomes therefore, one of teaching children and others how to find their greatest satisfaction and an outlet for their most fundamental needs through participation in socially desirable and mentally healthful activities.

Through continual and reasonably satisfying adjustments to the demands of their own natures, as well as to the dictates of the social order, individuals may develop that poise, confidence, and optimism which is emblematic of healthy-mindedness. Such persons are exemplifications of the counsel given many years ago by the great pioneer psychologist William James,[17] when he wrote, "We must make automatic and habitual, as early as possible, as many useful actions as we can, and guard against the growing into ways that are likely to be disadvantageous to us, as we should guard against the plague."

So we see that the hygiene program must work to develop in young men and women those desirable points of view and social attitudes which bid fair to eventuate in vigorous mental health. Such persons will be characterized by wholesome and constructive attitudes toward play and recreation, toward work and obligations, toward their own limitations and defects, toward problems relating to sex and marriage, toward social, moral, and religious duties, and toward a host of other inescapable obligations in our modern socio-economic order.

4. *Equipment with a Variety of Aesthetic and Recreational Interests.*—It is rightfully believed that a man's morale is greatly aided and abetted when he succeeds in making an adjustment to some remunerative vocation. Conditions are ideal if he finds satisfaction for any of his basic cravings in varied recreational activities nicely suited to his talents. But the way our industrial order is now organized such a utopian situation is not frequently

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[17] W. James, *Principles of Psychology,* Henry Holt & Company, 1890, vol. I, p. 127.

realized. As one commentator has recently written, "In a world where the greater part of mankind is engaged in work which furnishes none of the normal outlets or means of expression, where everything else is sacrified to the gods of efficiency-in-production, one can expect abnormal, pathological means of expressing frustrated emotions to be the normal thing."[18]

Such a situation indicates that in order to attain emotional balance man must find compensatory outlets in such recreational and aesthetic activities as are calculated to satisfy at least some of his needs unfulfilled in the vocation pursued. One of the aims of the mental hygiene program becomes, then, the furtherance of human satisfaction and personality balance through a provision of such recreational resources as the individual needs to round out his life and to satisfy his craving for the enjoyment of things beautiful in the realms of music, art, literature, and so on.

5. *Development of a Sound Moral and Religious Philosophy.*—It is believed by many educators and mental hygienists alike that both acceptance of high moral standards as guides to constructive living and subscription to the verities of the Christian religion act as safeguards for the development of wholesome personality. Moral codes, with their frequent checks on undesirable individualistic behavior, obviously lie at the very foundation of the integrity of society. As Taylor[19] says, in connection with his proposed mental-hygiene program, " . . . the individual who regards morals as inevitably alien to his nature, must live much less richly than does the person who understands morals as racial achievements in living, and who therefore is interested in their continual growth."

As for religion, with its interpretations of the deeper meanings back of experience and with its promises of a fuller life, acceptance of its central purposes assists the earnest individual in developing a confidence, a hope, and a motive that transcend material vicissitudes and give to life a richer meaning. As William James[20] put it, "religion thus makes easy and felicitous what in any cases is necessary; and if it be the only agency that can accomplish this result, its vital importance as a human faculty stands vindicated beyond dispute."

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[18] J. K. Skipper, What Price Leisure? *Educational Administration and Supervision*, 22: 286, 1936.

[19] W. S. Taylor, *op. cit.*, p. 749.

[20] W. James, *Varieties of Religious Experience*, Longmans, Green & Company, 1902, p. 51.

Thus we see that in the case of individuals who do not regard themselves as being too intellectually sophisticated to accept the postulations of religion, an acceptance of its plan of life supplies a central motive around which the specific problems and plans of the individual may well be organized. Obviously such a unity of purpose augurs well for favorable development and integration of behavior from a mental hygiene point of view.[21] Guardians of mental health might well foster the way of the good life in youth, since, as Thorndike and Gates[22] well say, "Familiarity with the larger and more abiding problems of life should increase the breadth of view, foster tolerance, augment ability to distinguish the important from trivial matters, and provide standards and incentives for improving conduct."

Danger Signals of Needed Adjustment.—If mental hygienists are to approximate the ideal of maladjustment prevention, it is patent that they must be alert in the matter of detecting early deviations in disposition and conduct. There are many physical signs, attitudes, and anomalies of behavior which in themselves appear quite normal under certain circumstances, but which, when overdone or unduly continued, become indicative of possibly deep-lying perversions of personality. A constructive program of mental-health building must, in the nature of the case, take cognizance of these indicators to the end that corrections in basic attitudes be made before the symptoms thereof multiply. Some of the symptoms of impending maladjustment which can readily be detected by the rank and file of teachers, as well as by clinicians (psychologists), are offered here with brief comments. They, as well as others, might well serve as weather vanes to observing guardians of the youth.

1. *Significant Physical Signs of Maladjustment.*—Impending maladjustments may not always be detectable from overt mani-

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[21] In an educational survey the writer found that some denominational schools overtly stress the religious motif as primary in the education of youth. They are apparently undisturbed at unfavorable academic comparisons between their products and those of the secular schools (L. P. Thorpe, An Evaluation of the Objectives of Church Secondary Schools, *School and Society*, 42: 291–294, 1935).

[22] E. L. Thorndike and A. I. Gates, *op. cit.*, p. 54. Quoted by permission of the publishers.

festations, but there undoubtedly are some physical signs that, on the basis of clinical experience, may be regarded as indicators of conflict, frustration, or some other form of personal insecurity. Jordan[23] has offered a useful list of such physical indicators, some of which were taken from mental hygiene teaching panels of the National Child Welfare Association. The list includes (1) twitching and fidgeting, (2) constant drumming with feet or fingers, (3) constant "making faces," (4) stammering or stuttering and queer breathing, (5) biting fingernails continuously, (6) other nervous mannerisms, (7) lying awake at night, (8) tossing and turning each night, (9) dreaming constantly, (10) having nightmares, (11) walking or talking in sleep, and (12) frequent vomiting. The presence of these expressions of "nervousness" may well attract the attention of those interested in the prevention of more pernicious disorders. To mental hygienists, they mean the necessity of immediate action with such prophylactic measures as seem appropriate under the circumstances.

2. *Dangers of the Tendency to Excessive Daydreaming.*—Another sign of needed adjustment is found in the tendency to excessive daydreaming. It is fine for an individual occasionally to reflect on his problems and plans for the future; such a practice is obviously wholesome. But when a child, for instance, carries his daydreaming to extremes, we can be reasonably sure that he is unhappy with things as they are, that his behavior is symptomatic of hidden conflicts, and that he is trying, in his misguided way, to secure certain satisfactions, through the retreat mechanisms of fantasy, that he has been denied in real life. Under these conditions, the mental hygienist naturally seeks to find in what respects the child's life is unsatisfactory to him, what cherished joys he has been denied, and what real-life satisfactions he needs in order to invalidate the necessity of resorting to dreams.

If the negative, withdrawing individual can be assisted to secure greater joys in association with people and real enterprizes than he finds in his fantasies, he will learn to prefer the former. Chronic daydreaming is a form of escape from reality which may lead gradually to a complete loss of interest in life. In its ultimate form, it is known as schizophrenia, a psychosis characterized by extreme emotional apathy and marked regressive disorders.

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[23] A. M. Jordan, *Educational Psychology*, Henry Holt & Company, 1933, p. 470.

3. *Seriousness of the Disposition to Hate Other People.*—Hate is a reaction to real or imagined wrongs. We find ourselves hating people who have double-crossed us or otherwise compromised our security. And although hate is usually a specific response to an equally specific situation, it may under some circumstances spread to a variety of situations. One boy, for example, told of the development of a hatred for all school teachers after having been hit on the head with a book by his social-science instructor. The extent to which antisocial behavior can develop as a concomitant of feelings of revenge and hatred is most disquieting to psychologists concerned with the promotion of mental-hygiene matters. Furthermore, as Morgan[24] reminds us, hate is one of the "primary requisites for the development of delusions of persecution." It goes without saying, then, that mental hygiene is deeply interested in finding ways and means of removing the basic causes of hate—an attitude which could eventuate in a paranoid condition.

4. *Pernicious Results of Constant Feelings of Inferiority.*—All of us have met people who are fairly obsessed with the conviction that they are incapable of accomplishing ordinary endeavors in a satisfactory way. And such feelings are frequently based on purely imaginary inferiority. The victim of this obsession often cannot succeed because he thinks he is incapable. It is a matter of perverted attitude. One woman of the author's acquaintance lived in constant fear that her every move was an inferior one. She felt incapable of deciding when and where to move, whether to keep her position or seek a better one, how to make an impression on other people, and even whether her intelligence was normal (after making a high I.Q. score).

Feelings of inferiority are not confined to embarrassments over past failures, but are often expressions of dread concerning ability to meet future problems. It is extremely difficult to convince some sufferers from the "inferiority complex" that they have any prospects at all of succeeding in future endeavors, and this in the face of bona fide evidence of even superior capacity for so doing. The pitiful thing about this affliction is that it frequently leads to a motley variety of needless compensatory actions that further circumscribe the victim's chances of effecting satisfactory adjustments. The inferior child may exhibit such miscarriages of adjustment as being spiteful, worrying unduly, showing excessive embarrassment, becoming highly sensitive, casting aspersions on the accomplishments of others, talking and blustering loudly, pouting, showing extreme timidity, stuttering, and even attempting suicide.[25] It is no wonder that mental hygienists look upon feelings of inferiority as symptoms of needed adjustment.

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[24] J. J. B. Morgan, *op. cit.*, p. 605.

5. *The Tendency toward Regression as a Danger Signal.*—The wholesome, successful individual is always striving to push ahead; he lives in anticipation of future accomplishments; he spends little time glorying in "the good old days" of childhood. The backward-looking mechanism is the normal way of old people whose principal joys are in the past, but unfortunately we find that some individuals, children even, being harassed by present hardships, attempt to regress back to an earlier and more protected level of living. This tendency is pernicious and should always be met with attempts to provide such gratifying successes, such interesting outlets, and such enduring satisfactions as will tend to ensure forward striving.

Many cases of pathological regression have been reported, and in each instance they have been extremely difficult to handle. The stress of modern life with its many social and business obligations is believed to be conducive to the giving up of the battle of life. Many have sought shelter in the gentle retreat of the fantasy world while others have attempted to return to less fundamental and less frustrating spheres of adaptation.[26] The tendency to regress is a real danger signal and merits the serious attention of the mental hygienist, be he psychologist, parent, or teacher.

6. *Living in Fear of Ridicule, Hostility, and Condemnation.*—Children not infrequently live in such an atmosphere of ridicule and unwarranted hostility that they are unable to find an outlet for their craving for legitimate recognition. Being rebuffed and condemned for so many things, they naturally turn to such modes of escape and evasion as are available to their natures.

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[25] A. M. Jordan, *op. cit.*, p. 471.

[26] See F. L. Wells, Mental Regression: Its Conceptions and Types, *Psychiatric Bulletin*, 9: 445–492, 1916.

This means that they readily get into a state of readiness to do almost anything that will ward off the hated condemnation. Some do their best to pass the buck by blaming others for their every act. This is natural but insidious since it may lead ultimately to systematic delusions of persecution. Other children will attempt to save their faces by developing high-powered rationalization in the form of plausible reasons for their unacceptable acts. This mechanism can be carried to such an extreme that the subject fully convinces himself of the justifiability of his conduct, thus losing his incentive to improve.

Yet other youngsters try to save the day for themselves by becoming "pathological liars." They adopt the crudely pragmatic method of letting the end justify the means. They live in an atmosphere of deceit but count it all profit if they get by with it. Such a slippery platform of living is obviously detrimental to mental health and indicates the presence of underlying maladjustments needing attention. These indicators of needed adjustment, as well as others that could be mentioned, *viz.*, running away from home, chronic suspicion, temper tantrums, truancy, stealing, sex vagaries, morbid cruelty, exaggerated illness, and the like, all demand the attention of the mental hygienist who hopes to stem the mounting tide of behavior aberrations and personality derangements.

II. AN INTELLIGENT PROGRAM OF ADJUSTMENT

Having considered in outline the significance of the mental-hygiene movement, some aspects of a comprehensive program for the conservation of mental health, and certain danger signals indicative of needed personality adjustments, we shall follow the logic of the situation by addressing ourselves next to a consideration of an intelligent program of mental-hygiene practice, a psychologically justified program that may well be participated in by parents, teachers, medical practioners, social workers, and psychologists. It would seem that, if society is to safeguard its interests along this line, it must seek the cooperation of as many agencies as are reasonably capable of participating therein. Personality integrity is a common problem, imperative to individual happiness, crucial to the survival of our civilization, and thus meriting the sympathetic and intelligent contributions of all constructive citizens.

Psychological Foundations of the Adjustment Program.—Before coming directly to the matter of psychological techniques in mental-hygiene practice, it is probably best that we pave the way through a presentation of some underlying principles essential to an understanding of the adjustment program. These principles are neither new nor novel, but, together with others of similar vein, they constitute the keystone of human nature. We have reference to the interlocked principles of (1) causation, (2) stimulus response, (3) imperious needs, and (4) specificity of behavior.

1. *Causation.*—It must always be remembered that whether we are thinking of organic or inorganic fields, all of nature's phenomena operate on the basis of inexorable laws. Whether we have reference to so-called "physical," "intellectual," "emotional," "moral," or "religious" matters all proceed in a cause and effect manner implicit in the natural order of things in our universe. So far as we know, there is no chaos, no mystery, no magic, no irregularity in the never-ending sequence of events. True, it is a profound mystery to us how life arises and how the marvelously intricate operations of nature can function as they do, but in and through it all we can see the unalterable principle of cause and effect marching unswervingly on and on.

In applying this important principle to mental-hygiene problems, Bassett[27] has written a paragraph which we cannot resist quoting. She says, "The teacher [and, we would add, others] must keep in mind the fact that the difficult personality traits of behavior of the child are not due to any mysterious dispensation, but are the logical outcome of the life experiences of the individual and can be traced with fair clearness back through the years to their causes. The child's difficulties do not suddenly and perversely happen out of a clear sky. They usually have a long, intricate history extending into the past, in which the careful observer may discern the sequences of cause and effect. Thus, the path of understanding will require a greater expenditure of time and effort in patient inquiry than does the method of trial and punishment, but the constructive results flowing from the former method are incalculably greater."

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[27] C. Bassett, *The School and Mental Health*, The Commonwealth Fund, 1931, p. 11.

If the reader will keep this statement in mind in connection with the mental-hygiene program, he will realize that there is a science, intricate as it is, of genetic psychology and that misbehavior on the part of children and youth can often be traced to incompatible relationships in the home, to stupid and unsympathetic handling on the part of parents, to severe and frustrating experiences in connection with school life, to unwholesome conditions in the community environment, and to an endless combination of those and similar causes. The principal thing to notice is that cause and effect rule and that causes should as far as possible be controlled.

2. *Stimulus Response.*—Everyone informed in psychology understands the stimulus-response principle in general—that every response, be it physical, mental, or emotional, is a necessary reaction to an environmental or intraorganic stimulus. But this principle is often misunderstood in connection with behavioral and personality problems. The human organism is not a neutral (affectively speaking) mechanism responding with indifference to various forms of stimuli; it is, rather, a feeling instrument, characterized as well by certain inherent needs, and thus subject to marked affective responses when stimulating conditions hamper the realization of these basis wants.

In short, the individual possesses an *emotional nature* and consequently is subject to responses in the form of what we call joy, affection, appreciation, jealousy, resentment, hatred, suspicion, discouragement, fear, and the like. And, since these causally aroused feeling tones (tensions) lead naturally to subsequent reactions of profound import for character and personality, it becomes the business of mental hygiene to attempt regulation and control of their appearance. To put it in another way, it is of transcendent importance to all of us how and with what feelings children react to deprivations, deformities, indulgences, handicaps, failures, successes, indifference, and a multitude of other tension-producing factors.[28]

3. *Imperious Needs.*—We have mentioned these inherent and derived needs—organic, social, and psychological—before (Chaps. V and VIII) and expect to touch on them again. They loom

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[28] A. M. Jordan, *op. cit.*, pp. 464–465.

large in any serious treatment of the psychology of personality.[29] Being imperative to satisfaction and adjustment, they are the determiners of how an individual will respond to a wide variety of stimuli. The practice of mental hygiene, whether carried on by amateurs or clinicians, must, then, be operated in terms of the influence on behavior and attitude of these irreducible human wants.

"The child has certain fundamental emotional cravings, such as the need for affection and understanding, the need for respecting his parents and teachers, the need for security, the need for attention and approval, the need for successful achievement, the need for friends and companions, and the need for varied and interesting outlets of his energies in work and play. If the circumstances of the child's home and school life are such that they tend habitually to thwart or to deprive him of any or all of these legitimate satisfactions, or to overaccentuate any of them, the results show themselves in nervousness, in the development of unhappy personality traits, or in misbehavior. Thus, the misbehavior is merely a symptom of hidden maladjustments, and the purpose of the child's behavior is usually a blind and misguided effort to secure satisfactions which are entirely natural and to which he is entitled."[30] This is the doctrine of imperious needs and indicates its import in the psychology of adjustment.

4. *Specificity of Behavior.*—In our previous (Chap. VII), somewhat detailed analysis of "specificity"—a doctrine, the implication of which should be kept constantly in mind in all psychological study—we came to the tentative conclusion that children at least react in a specialized manner to each specific stimulating situation. While adults may and certainly often do organize their behavior around guiding principles in the form of laws, morals, and codes of various kinds, children must go through a great deal of concrete, point-by-point, unanalyzed experience before they develop sufficient insight to amalgamate their actions into relatively consistent traits of a socially desirable sort, *i.e.*, honesty, thrift, self-control, industry, sympathy, cooperation, etc.[31]

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[29] See, P. M. Symonds, Human Drives, *Journal of Educational Psychology*, 25: 681–694, 1934; and W. C. Trow, *Educational Psychology*, Houghton Mifflin Company, 1931, pp. 28–43.

[30] C. Bassett, *op. cit.*, pp. 10–11.

[31] W. W. Charters, *The Teaching of Ideals*, The Macmillan Company, 1927, Chap. 5.

But the traits mentioned are adult fashioned and to some extent satisfaction-denying (to children) constellations of specific behavior which naturally make heavy demands on the originally hedonistic natures of youngsters. It takes time and much effort to build and consolidate these traits. Their specific components of trait action remain specific for a long time before yielding (if ever) to the welding influences of adult-conceived social regulations and ethical codes.

But when we come to antisocial and the various evasive forms of behavior which result from frustration and conflict-produced emotional tensions—and here is a critical point—we find at least a *partial reversal of the principle of specificity of behavior*, even in children. When under the emotional stress of resentment, failure, hatred, suspicion, anxiety, feelings of guilt and shame, and the like, a child is likely *to spread his misguided and tension-induced perverted behavior to a wide variety of situations, and that without instruction or experience in "transfer of training."* In short, whereas good "specifics" become widespread only after much painstaking training, bad trait actions may pervade almost spontaneously the major area of a child's behavior life. If this interpretation is correct, it suggests the extreme importance of prevention of emotional maladjustments and the crucial value of mental-hygiene measures.

The Importance of Recognizing Primary Needs.—As a logical corollary of what has been said about the functions of primary needs in the economy of life, we should like to advance the general thesis that freedom from disintegrating conflict, as well as the essence of personality adjustment, are achieved through a balanced realization of the legitimate physiological, social, and psychological needs of the human organism. And we should like to stress the word "balanced" again. There is no logic in emphasizing the importance of assuring the individual *enough* of such of the good things of life as allay stress and insecurity while, at the same time, failing to realize that a *surfeit* of the same "ingredients" will probably result in as unfortunate a situation for adjustment as does out-and-out insufficiency.

To be concrete, too much management of children is as bad as too little, too much food is often as detrimental as not enough; an excess of parental indulgence is as evil in its effects as undue restraint; too much praise may result in as bad a situation as excessive indifference; a surfeit of play, work, rest, independence of action, or social recognition may be as detrimental to personality integration as an insufficiency of the same. The key to mental health and happiness seems to lie in achieving a *temperate* realization of these needs.

But through it all, we must remember that is it imperative that the child enjoy a fruition of his natural and, what we might call his inalienable rights. On the organic side, he needs food, water, rest, sleep, and freedom from pain, injury, and too intense heat or cold. If these needs are forthcoming in moderation and under proper conditions, all is well as far as this category of want is concerned, and thus physical health, as well as related mental and emotional integrity, is achieved. If, in the social realm, the child enjoys love, recognition from those who count, the feeling of belonging, a reasonable amount of prestige, and the invigorating joy of successful accomplishment, he is all set for a healthy outlook on life and the goals of mental hygiene are being realized in his case.

Conversely, the unfortunate child who is denied at least a modicum of these good things is led to resort to evasive and clandestine behavior designed in its crude way to provide substitute satisfactions. Such indulgence may take the direction of unlawful acts, deceitful practices, or sex perversions with their concomitant feelings of guilt and shame. Thus the objectives of personality adjustment have been defeated and the influence of constructive agencies rendered innocuous.

The same logic goes for the psychological needs[32]—play, recreation, independence of action, and freedom to pursue personal goals. The happy child, or adult for that matter, is the one who enjoys a reasonable amount of spontaneous play carried on for the sheer joy of relaxation and untrammeled action. And all of us know of the dejection and irritation experienced by individuals who are dominated in their every move, curtailed in their efforts to plan activities, and frustrated in their strivings to attain cherished personal independence. History is full of accounts of the uprisings of people who have been unduly subjected to suppression of individual incentive in matters pertaining to the adoption of policies governing their liberties. Balanced realization and satisfactory outlets in this realm of need are also imperative to nice adjustment. In fact, they constitute major keys to personality development and integration.

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[32] Adapted from a similar classification in W. C. Trow, *op. cit.*, pp. 32–37.

Burnham[33] has made much of what is called "the gospel of the task" in his earlier treatise on mental hygiene. According to this doctrine "the minimal essential conditions of mental health and education alike are a task, a plan, and freedom." This is comparable to saying that a child develops most wholesomely when he enjoys reasonable freedom to plan some of his activities and to work them out without undue interference on the part of unsympathetic and stereotyped parents or teachers. As Burnham puts it, "Freedom to choose one's own task and form one's own plan is necessary in order to develop initiative, personal responsiblity, and to avoid unfortunate inhibitions." Evidence for the validity of this view, which, incidentally, is not to be regarded as synonymous with doctrines of unhampered license of child caprices, is said to have accrued in abundance in connection with both educational experience and clinical observation.

Before leaving this section, it should be mentioned that, although it is important that growing personalities realize a temperate consummation of the legitimate wants under discussion, it is equally essential that they learn to satisfy them in ways satisfactory to decent societies and in harmony with approved social mores. It is one thing to find food, shelter, and other essential bodily needs by way of honest labor and legitimate home provisions, but it is another thing to secure them, especially if they are intended to satisfy perverted tastes, through theft, deceit, or perhaps begging. These avenues may provide the necessary ingredients for organic satisfaction, but they surely abort the whole process of character and personality building. The same with social needs. Favorable recognition and merited success may be realized through approved channels and by honest efforts to be fair and square with everyone or they, too, may be sought through illegitimate avenues—emotional outbursts, fantastic daydreams, intellectual evasions, superiority complexes, self-delusions, criminal acts, and the like.

Incidentally, we might well remind ourselves that the manner pursued by the child or youth in this quest for satisfaction depends to a very large degree upon the way in which those responsible have previously engineered (or failed to engineer) the reciprocal relations between his dynamic nature and the practical conditions under which he is required to find adjustment thereof. In short, everything depends on how he has been treated and taught by his people. We can conclude with Trow[34] that in the program of adjustment, we must assist young people to "*discover the things which they actually need*, that their desires may in part, at least, be in this direction," and then help them to "*discover the best way to satisfy these needs.*" Only thus can human nature find socially approved outlets for driving needs and avoid the spectacle of a surreptitious search for satisfaction of perverted desires.

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[33] W. H. Burnham, *The Normal Mind*, D. Appleton-Century Company, Inc., 1924, p. 228.

Importance of Providing Suitable Environment.—From what has just been said it follows that the environment, with its diverse personalities, its social institutions, its galaxy of social folkways, its cross currents of good and evil influences, its challenges to individual integrity, its opportunities for realization of imperious needs, and its many competitive enterprizes, is predominantly the moulder of attitudes and consequently the determiner of behavior. Only through *controlling* this environment can we hope to engender in children the disposition to find an outlet for social tendencies in constructive and cooperative enterprises and thus avoid the development of those perverted attitudes which bespeak so much friction and which militate so heavily against satisfactory adjustment to the requirements of an orderly life.

On the basis of the related principles of causation, stimulus response, and imperious needs, we can say that the patterns of behavior arising in any given child are the mechanical and inevitable effects of the antecedent patterns of stimulation with which the child has been surrounded in his home. Given configurations of stimulation eventuate in patterns of response that are homemade—they are the causal aftermath of the way environmental influences have affected the child. It is a case of "Train up a child in the way he should go and when he is old he will not depart from it."

It is obvious, of course, that in the light of present knowledge we cannot predict the exact effects on any child of rapidly shifting and recombining patterns of stimuli, nor can we know the effects of certain unsatisfactory conditions on any one child. But we do know in a general way at least that some home and school influences result in the development of wholesome, optimistic, and socially desirable dispositions, while others, according to common observation and clinical evidence, eventuate in the various ramifications of maladjustment. Since, then, a study of the home environment is the clue to, and presents a dynamic picture of a child's character and personality make-up, the moral must be, " . . . control the social order sufficiently to insure . . . adequate adjustment."[35]

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[34] W. C. Trow, *op. cit.*, p. 93.

From these considerations, we can begin to comprehend the import of a suitable and intelligently controlled environment for the rearing of wholesomely disposed and socially well adjusted young people. We do not know enough and are probably not patient enough to develop ideal products—indeed, the conditions of modern civilization are apparently such as to preclude such a utopian outcome—but there is sufficient knowledge at hand to enable us to do much more than we have in the past. We can, for example, provide our children with enough of the material and social good things of life to alleviate any necessity on their part of indulging excessively in the various escape and defense mechanisms. At least we can try to teach them diplomatic ways of gaining friends and the respect of those who mean something to them. It is apparently a cardinal principle that happy, well-nourished, and guilt-free youth do not indulge in either neurotic mechanisms or delinquent behavior. They are simply not stimulated to do so; causation does not operate that way.

In cases where undesirable behavior has already come into the picture, we can attempt to ferret out the urge back of the overt acts and proceed to supply the individual with a more desirable substitute outlet for his energy. This is the psychologically important principle of *substitution* which, in progressive homes and schools, is superseding the older method of thwarting. It offers great possibilities since so many wholesome substitute activities are available in the realms of play, recreation, athletics, music, art, work, travel, reading, scout organizations, and the like.

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[35] J. J. B. Morgan, *Child Psychology,* Farrar & Rinehart, Inc., 1934, p. 493. Copyright 1934. Reprinted by permission of the publishers.

The principle of substitution is well illustrated in an incident related by Bassett.[36] A gang of adolescent vandals was caught destroying beautiful flower beds, which certain citizens of a small town has succeeded in raising only after much backbreaking work. Subsequent to being haled into court, these miscreants were about to be shunted off to an industrial school when a generous citizen—evidently a lover of boys—offered to be responsible for them if paroled to him. When the request was granted, he proceeded to organize garden clubs in which these boys were given responsibilities. As the story goes, the lads readily fell in with the plan and soon their energies were enthusiastically enlisted, not only in developing flower gardens, but in gaining knowledge, in developing appreciation, and in learning the joys of constructive effort.

Controlling the Child's Social Environment.—The environment can also be controlled so as to teach the child the important habit of succeeding. All mental hygienists agree that successful accomplishment is one of the most effective factors known for the development of a healthy and confident outlook on life. This is easy to understand when we recall that merited success usually brings in its wake praise, favorable recognition, friends, rewards, and other forms of that ultimate quest of all men—security. Success can be assured if we see to it that the child, especially the timid boy or girl, is given tasks that, although difficult enough to demand a reasonable amount of effort are sufficiently easy to make success certain. These successes can be pyramided until confidence has been definitely attained. And it should be realized that activities can be selected from any promising sphere—scholarship, sports, mechanics, music, or social leadership. The critical point is that, in order to profit by the mental health-giving effects of successful effort, every child must become skillful in some endeavor, be it only playing a mouth organ. Success is a tonic which we all require and as Morgan[37] has aptly reminded us, the mental-hygiene effect of any legitimate and merited success is the same.

The controlled environment is also the avenue to wholesome, invigorating play and recreation, the outlet for social tendencies and activity drives. Properly regulated, joyous play provides an emotional relaxation and a morale that are ideally calculated to promote the development of a wholesome personality. The medievals, being in the grip of the morbid doctrine of total depravity, believed that play was of the devil; but today, no one but an eccentric would hold to such a view, *i.e.*, if he knew anything about child psychology and mental hygiene. Play not only offers physical and mental health-giving activity, but it provides the child and the youth with an opportunity to enjoy a legitimate expression of that freedom of action which we now recognize as one of the basic drives of man.

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[36] C. Bassett, *op. cit.*, p. 12.

[37] J. J. B. Morgan, *The Psychology of the Unadjusted School Child*, The Macmillan Company, 1924, p. 291.

Most important of all, the environment, in the form of a good home, provides the child with the most fundamental need known —*security*. Here he should be given the feeling of belonging, of being wanted, of being an individual in his own right. Only under such circumstances can he develop confidence, optimism, fellowship, good will, cooperation, and all the other cardinal principles of social adjustment. The home is the citadel of personality building and should, in all seriousness, be presided over by individuals vested with some knowledge of child nature, the mechanisms of behavior, and the consequences of unbalanced realization of basic needs. This is the conclusion reached by Groves and Blanchard[38] in their discussion of home influence. They say, "It is evident that the mental hygiene of childhood is essentially a problem of efficient parenthood. Parents who understand the emotional needs of their children are in a position to guarantee their young a well-rounded development . . . Efficient parenthood is the work of self-controlled adults, alert to the implications of mental hygiene."

It was considerations such as these that led to the formulation of the justly famous Children's Charter[39] of the White House Conference in 1930. This document, which is essentially a mental-hygiene program, might well be reproduced in this connection, but we must content ourselves with the presentation of only a few of its propositions. These are typical of the complete document: (1) "For every child spiritual and moral training to help him to stand firm under pressure of life." (2) "For every child understanding and guarding of his personality as his most precious right." (3) "For every child a home and that love and security which a home provides; and for that child who must receive foster care, the nearest substitute for his own home." (7) "For every child a dwelling place safe, sanitary, and wholesome, with reasonable provisions for privacy, free from conditions which tend to thwart his development and a home environment harmonious and enrichening." (9) "For every child a community which recognizes and plans for his needs, protects him against physical dangers, moral hazards, and disease; provides him with safe and wholesome places for play and recreation; and makes provision for his cultural and social needs."

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[38] E. R. Groves and P. Blanchard, *Introduction to Mental Hygiene*, Henry Holt & Company, 1930, p. 445.

[39] *White House Conference*, D. Appleton-Century Company, Inc., 1930.

Mental-hygiene Demands on the Teacher.—Although it is generally acknowledged that the first few years of intimate family life give primary direction to the trait neuclei, which, when amplified and consolidated into definite preferences, attitudes, and dispositions to act, constitute the fabric of the personality, it is undoubtedly true that most of the preludes to actual mental diseases, as well as to many of the less serious personality disturbances, are first detectable in the domain of the school. It is true that childhood is the "golden age" of preventive hygiene —physical and mental—but it is during school days that preneurotic clinical pictures become sufficiently articulate to attract the attention of those concerned with such matters.

Thus we see that incipient disturbances occur literally by the thousand under the very eye of the teacher. What a tragedy it is that so many of these well-meaning lesson hearers, whom a recent writer[40] has honored with the epithet "architects of the wholesome personality development of the nation's children," should be so unable to detect and interpret the precursers of serious forms of what in legal terms is called "insanity." It would seem that, in the larger and more consequential view, this ought to be the primary function of the guardians of our youth. But as Fletcher[41] says, "It is the rare teacher who knows, for example, that the little girl whose feelings are constantly being hurt by the suspicion that her companions have talked about her is exhibiting a symptom which is identical in kind with those that accompany certain forms of *dementia praecox*." Also "Only the exceptional teacher sees the fundamental relationship between introvertive day-dreaming, which is pathological and creative imagination, which is a work of genius, and thus is able to avoid the one and afford life-giving expression to the other."

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[40] J. E. W. Wallin, *Personality Maladjustments and Mental Hygiene*, McGraw-Hill Book Company, Inc., 1935, p. v.

[41] J. M. Fletcher, *Psychology in Education*, Doubleday, Doran & Company, Inc., 1934, pp. 266–267.

Not that teachers are indifferent to the welfare of their charges. Most of them are obviously willing even to sacrifice in order to insure progress, as they see it, on the part of their boys and girls. But good intention is one thing; insight into and ability to cope with the really vital problems of personality adjustment are something else. In time to come, we predict that teaching, being concerned with primary matters of all-round physical, emotional, and mental well being, will probably take up this slack insofar as teachers can be taught to function as mental hygienists.

In the meantime, however, things are going on in our schools that offer no little concern to those in a position to realize their import. The author spends much of the time that he can devote to clinical work, attempting to untangle complicated personality disturbances that have arisen out of hopelessly inadequate and sometimes vicious (from a mental-hygiene standpoint) school situations. This is apparently caused by the inability of some teachers to comprehend the significance of the underlying causes of children's behavior. They are concerned with symptoms, punishments, and, above all, meticulous good order. We might say that they inadvertently "fail to see the trees for the forest" *i.e.*, symptoms, as overt acts, blind them to the existence of deeper running conflicts and maladjustments in their children.

Thus, instead of dealing objectively with emotional mechanisms of evasion and compensation, they are likely to attack such *expressions* thereof as lying, stealing, truancy, cruelty, etc., from an ethical or moral point of view only. It is a case of sin and punishment vs. diagnosis and remedy. It might be all right to start with the sin and end with the punishment, but in intelligent and sympathetic work with children and youth, it is absolutely imperative that we interpolate the diagnostic and remedial steps. If we did, we would very often find that the children's lot has been a hard one, worthy of our sympathy, and that their vagaries "must be regarded as symptomatic of some underlying frustration or conflict—they are the child's frantic S.O.S. for help."[42]

Examples of Teacher Inadequacies.—In illustrating the extent to which teachers are liable to overlook symptoms of grave significance in the behavior of pupils, Fletcher refers to the statement by Pressey[43] that cases ultimately diagnosed as true paranoia (a severe psychosis characterized by conceit in the form of delusions of grandeur and by systematic delusions of persecution) are likely to show good school records in spite of the fact that in early life the typical paranoiac shows "a certain artificiality in his relations to other people, a certain conceit and egotism, and a markedly suspicious nature." Concerning this unfortunate state of affairs, Fletcher[44] comments, "Now the fact that a child during his school days may manifest symptoms that are the same fundamentally as those which make up this inescapable psychosis, without having such symptoms recognized until it has become too late to do anything about it, is an interesting commentary on our educational philosophy. What, pray, is a good school record?" We could add, of course, that it may be a rather large order to expect the rank and file of teachers to detect the incipient symptoms of a major mental disease, the course of which has not been too well charted by psychologists and psychiatrists. The point, however, is certainly a good one.

Perhaps the clearest evidence, touching on the inability of teachers to sense the significance for ultimate personality integrity of various types of pupil misbehavior is that presented by Wickman[45] (and later amplified by others).[46] As previously mentioned, he found that teachers were almost diametrically opposed to clinicians in judging the seriousness of pupil's behavior difficulties. To the clinicians such retreating types of response as unsocialness, suspiciousness, depression, resentfulness, fearfulness, sensitiveness, and the like appeared decidedly serious, but to teachers who were evidently concerned more with maintaining order, guarding their authority, and promoting social standards, these quiet manifestations seemed quite harmless. They mentioned the "attacking" types, *i.e.*, heterosexual activity, untruthfulness, defiance, destroying school property, etc., as being most serious.

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[42] S. L. Pressey, *Psychology and the New Education*, Harper & Brothers, 1933, p. 181. Reprinted by permission of the publishers.

[43] S. L. Pressey, *Mental Abnormality and Deficiency*, The Macmillan Company, 1926, p. 174. Quoted by permission of the publisher.

[44] J. M. Fletcher, *op. cit.*, p. 267.

[45] E. K. Wickman, *Children's Behavior and Teacher's Attitudes*, Commonwealth Fund, 1928.

[46] V. E. Dickson, Behavior Difficulties That Baffle Teachers, *Journal of Juvenile Research*, 16: 93–101, 1932. See also, L. Peck, Teacher's Reports of the Problems of Unadjusted School Children, *Journal of Educational Psychology*, 26: 123–138, 1935.

While the teachers were certainly warranted in pointing out the impropriety of the items mentioned, they erred in failing to sense the significance of the withdrawing mechanisms so frequently in evidence. But it must be remembered that the clinicians had an advantage over the teachers, from a mental-hygiene point of view at least, in that they based their evaluations on evidence secured from investigations of the origin of social-pathological problems, which evidence is not usually available to teachers. But the import of the teachers' inverted view is obvious. As Wickman succinctly remarks, "By counter-attacking the attacking types of problems and by indulging the withdrawing types, the underlying difficulties of adjustment in each case are increased and the undesirable expressions of social behavior are further entrenched" (page 171).

We see, thus, that since early recognition is essential to success in dealing with personality pathology and in view of the fact that many of the first deviations from normal conduct and attitude occur under the very eyes of the teacher, the prevention of mental disease must be to a very large extent the work of teachers. In major centers, the school psychologist will figure prominently in the program,[47] as will other specialists, but by and large, if the mental health and ultimate happiness of the rank and file of American school children is to be conserved, the teacher must be cognizant of and able to deal with the common maladjustments of children as well as the usual mechanisms of attempted adjustment. In short, the teacher must be at least an embryo mental hygienist.

The Problem of the Maladjusted Teacher.—If teachers are to accept this inevitable challenge, it stands to reason that, in addition to being appropriately informed, they must themselves be relatively free from maladjustments. As things now stand, entirely too many of them are afflicted with such chronic disorders of personality as bid fair to eventuate in the development of a sizable crop of disturbances in the very children whom they are supposed to nourish and cherish as the heritage of society. This is tantamount to saying that some teachers not only fail to do constructive work with their boys and girls, but that they stimulate them in such a way as to develop from virgin soil as it were, actual behavior delinquencies and warped personalities.[48]

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[47] G. H. Hildreth, *Psychological Service for School Problems*, World Book Company, 1930, p. 16.

As an instance of this, Bassett[49] tells of a first-grade teacher who burst into a tirade of emotional denunciation when visited by a social worker desiring some information about a patient. It seems that she labored under the delusion that the administrators of the school were all "in league against her." One can imagine the influence she would have on the lives of children passing through her grade. Wallin[50] writes of a teacher who, owing to the cruelty and persecution of her own third-grade teacher, developed an inferiority attitude sufficiently severe to keep her in a permanent state of timidity even after she had an abundance of evidence indicative of excellent ability. Even as a teacher, she never got over the irrepressible feeling that her "alleged" ability was spurious and that she was in reality "putting it over" on everyone who knew her.

There is no place in vital education for the fussy, worried teacher; the jealous, domineering teacher; the teacher who looks on every erring child as a lost soul; the teacher who is hopelessly shocked at every mention of sex; the depressed, fearful, harassed teacher; and the teacher who regards her pupils as her "natural enemies."[51] Children need enthusiastic teachers who themselves enjoy sufficient friends, relaxing recreations, and varied interests to insure symmetry of personality and balance of views. Whether teachers realize it or not the personality qualities arising in their children are matters of cause and effect, not accidents. Thus mental-hygiene practice, especially from the early detection and prevention angle, lies directly within the range of their duties.

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[48] See, J. E. W. Wallin, *op. cit.*, pp. 100–107; and C. Bassett, *op. cit.*, Chap. 7.

[49] C. Bassett, *op. cit.*, pp. 46–47.

[50] J. E. W. Wallin, *op. cit.*, p. 104.

[51] C. Bassett, *op. cit.*, p. 47.

The Need for Mental-hygiene Clinics.—Ours is said to be a neurotic age. Anyone with a little "streak" of alarmism in his system can easily, by pointing out the copresence in our world of an intricate, frustrating civilization and a mounting toll of mental diseases (not to mention criminality), make quite a case for such a statement. To quote one recent writer, "If modern man suffers from individual neurosis more acute and widespread than history has ever known (that is the expert judgment of our greatest psychoanalytic psychiatrist), it is because the specific type of civilization that shapes him to the thing he is, is itself a study in neurosis."[52] This may be the case, but we must always remember the warning received from an undergraduate professor in statistics who, in expounding the meaning of coefficients of correlation, reminded us that when two series of data turn out to be significantly related the correlation is not necessarily a *causal* one—it may easily be *concomitant*, that is, involve coexistence without causal relation. This is the previously mentioned position taken by Moss and Hunt who have expressed the conviction that, as far as actual mental diseases are concerned, the stress of social and economic conditions is probably only a minor or contributary cause.

However, exclusive of any needless pessimism in the matter or of any antithetical false security, the disquieting fact remains that there is an alarming amount of serious behavior perversion and of personality maladjustment in our society. It has been estimated that on the behavior side approximately three hundred thousand[53] adults are annually committed as inmates to penal institutions and that of all the children born in the United States, 1 out of every 26 of those reaching maturity is destined to become insane.[54] Doctor May[55] of the Boston State Hospital has indicated as well that, whereas our general population increased 13.6 per cent from 1880 to 1918 the population in hospitals for mental diseases increased 27.7 per cent during the same period. Regardless of whether mental disorders are actually on the increase, it is obvious that the figures mentioned should stir schools as well as other institutions to appropriate preventative measures.

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[52] S. Schmalhausen, This Neurotic Age, *The Modern Thinker*, July–August, 1932.

[53] C. E. Germane and E. G. Germane, *Character Education*, Silver, Burdett & Company, 1929, Part I, p. 109.

[54] F. E. Williams, Community Responsibility in Mental Hygiene, *American Review*, January, 1923, pp. 56–64.

[55] J. V. May, *Mental Diseases*, Chapman & Grimes, 1922, Chap. 1.

In commenting on the crime situation, Germane and Germane[56] ask the pertinent question as to where our future penal inmates are today. They answer their own question—"There is only one answer: They are in our homes and schools. They are criminals in the embryo. Why? The chief reason is that they are daily making many maladjustments to their life situations." These writers, who are evidently strong believers in the efficacy of favorable home and school conditions for character development, go on to say, "Probably 97 per cent of these potential criminals could become good citizens, if teachers, parents, and communities realized the significance of helping children make wholesome social adjustments to their many perplexing life problems." This is the optimistic view which automatically posits the home and school as safe and constructive agencies for the inculcation of mental health. Any other view throws us back into the fallacies of criminal types, potential delinquency, moral imbecility, and all the other now passé social doctrines of yesterday.

The situation is much the same with respect to personality disorders. Our citizens of tomorrow are our school boys and school girls of today. Thousands who are now struggling with what seem to us insignificant problems of failure, fear, insecurity, depression, timidity, inferiority, daydreaming, suspicion, conceit, etc., will in all likelihood swell the ranks of our adult cranks, critics, eccentrics, cynics, malcontents, as well as those of out-and-out epileptics, paranoiacs, schizophrenics, manic-depressives, psychopathic personalities, psychesthenics, neuresthenics, hystericals, and all manner of combinations of these and other major afflictions. Is it any wonder that mental hygienists are anxious to see the home and school function as agencies for the guarantee of mental integrity. It would be strange if they were not.

The Development of Mental-hygiene Clinics.—One of the most tangible expressions of society's concern over the situation as outlined is found in the rise of the psychological (and psychiatric) clinic, a social institution designed to combat the evils of mounting disease as well as to conserve the mental and emotional soundness of the nation's children. The story of the development of these clinics[57] parallels, to a considerable extent, such related movements as the growth of the state hospital system, the establishment of juvenile courts, the development of university departments of psychology and education, and the previously mentioned mental-hygiene movement. All of these modern institutions have aided materially in the cause of a better understanding of the causation and correction of psychological disturbances. As an outstanding example of these contributions we would mention the excellent pioneer researches of William Healy, in the field of juvenile delinquency as carried out in the clinics of Chicago and, later, of Boston. Much could be said as well for the early clinical work of such men as G. Stanley Hall, H. H. Goddard, J. E. W. Wallin, and the French psychologist, Alfred Binet. Many others could be mentioned.

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[56] C. E. Germane and E. G. Germane, *op. cit.*, pp. 109–110. Copyright 1929. Quotations reprinted by permission of the authors and the publisher, Silver Burdett Company.

With the establishment of a weekly child-behavior clinic in the State School for the Feebleminded at Waverly, Mass., in 1891, we witnessed the first specialized institution of its kind in this country. There pioneer efforts were made to diagnose behavior disorders from data drawn from medical, social, and psychological examinations. Thus we see a foreshadowing of the techniques now current in our modern child guidance clinics. As for the juvenile delinquency movement, its first clinic was inaugurated in Chicago in 1909. The potential possibilities of these clinics soon became apparent to the world of social and educational workers with the result that they are now fairly common in major centers.

It should be noted that while clinics were originally established for the purpose of preventing the further amplification of mental disorders and delinquent trends, they have more recently come to be concerned with the all-round physical, mental, emotional, and educational welfare of normal children as well as with those already in the throes of serious breakdowns of one kind or another. They are attempting to assist in the common problem of guaranteeing to all children and youth symmetrical growth

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[57] For a brief account of this movement see P. Blanchard, *The Child and Society*, Longmans, Green & Company, 1928, Chap. 15. For an extended discussion read J. V. May, *Mental Diseases*, Chapman & Grimes, 1922, Chaps. 1–6.

"unhampered by mental conflicts, inhibiting anxieties, or other emotional disturbances, which may not be sufficiently powerful to force a complete break between the individual and the group, but at the same time interfere with his serenity and his ability to concentrate whole heartedly upon the affairs of life."[58]

Psychologists vs. Teachers as Mental Hygienists.—The question might well be raised; if mental hygiene practice is so inevitably the task of progressive teachers what are the functions of a school psychologist who presides over or operates in connection with a child-guidance clinic? Hildreth[59]—herself such a psychologist—has essayed an answer to this query. As she puts it, the teacher is essentially a specialist in the technique of teaching or giving instruction and presumably a generalist only in matters pertaining to child study, whereas the school psychologist is an expert in the analysis and treatment of the more intricate mental, emotional, and educational problems which beset school children. And since the functions of such a specialist are very time consuming as well as exacting in psychological skill and scientific technique, his or her work really assists the busy teacher or administrator instead of encroaching upon it as some had supposed. Furthermore, the psychologist cooperates with teachers and supervisers in administering educational guidance.

Nevertheless, there is some evidence that the rank and file of teachers, who have had some work along mental-hygiene and character-education lines, can and do carry on successful case work with pupils suffering from marked behavior disorders. Germane and Germane[60] tell of a project in which 915 teachers (enrolled in their character-education classes) carried to completion over 2,600 such case studies. Following the outline of a fairly elaborate procedure devised for the occasion they found, to their satisfaction at least, that there are some simple but fundamental principles involved which teachers can readily master.

They found that the types of delinquencies perpetrated were surprisingly alike for the various school grades. These included in the order given: Theft, lack of interest, disobedience, selfishness, poor sportsmanship, lying, cheating, mischievousness, discourtesy, etc. In attempting to deal with these problems, the teachers believe that they made two distinct contributions: (1) "They discovered many of the common causal factors that operate to produce certain types of delinquencies." (2) "They discovered through experimentation several remedial means and devices for each of the outstanding types of delinquencies" (page 157). Excerpts from their reports suggest that expressions of *sympathy and understanding* are two of the most influential approaches in remedial and social guidance work. As one teacher reported, "Making the child feel that I really care for him and take a sincere interest in him and his home life is responsible for whatever success I may have enjoyed over a long period of years, when dealing with the problem child" (page 158).

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[58] P. Blanchard, *op. cit.*, pp. 324–325.

[59] G. H. Hildreth, *op. cit.*, pp. 16, 17, 21.

[60] C. E. Germane and E. G. Germane, *op cit.*, Part I, Chaps. 5–7. Copyright 1929. Quotations reprinted by permission of the authors and the publisher, Silver Burdett Company.

It will be noticed, of course, that these are almost exclusively behavior problems which, while complex enough in their origin, are not usually considered as difficult to analyze and correct as are the more baffling personality deviations which we associate with introversion, melancholia, inferiority feelings, mild forms of hysteria, stuttering, and personal and social maladjustment in general. Perhaps these and some of the more involved educational problem cases require the expert services of schooled psychologists. But we certainly must recognize the value of the adjustment work accomplished by these willing teachers. We could wish that thousands of others would discommode themselves sufficiently to accomplish a similar piece of work.

While school clinics are relatively costly, they have proved to be very valuable in the solution of a wide variety of problems peculiar to school children. If they can contribute materially to the task of stemming the tide of social wastage incidental to maladjustments of all kinds, they will certainly be regarded as indispensable agencies for the promotion of a sounder and more virile society. In this they can cooperate with such other vital mental-hygiene channels as psychiatric clinics, behavior clinics for mothers of small children, parent-teacher organizations, and all other agencies existing for the nurture and rehabilitation of our children.

III. SOME CARDINAL PRINCIPLES OF MENTAL HEALTH

As in the case of the data of abnormal psychology, so-called mental hygiene principles must at present rest, for the most part, on the testimony of empirical experience and clinical evidence. Owing to the paucity of objective evidence from controlled experiments and to the lack of scientific knowledge in general in this field, nothing but the pressing needs of practical life warrant the attempted formulation of generalizations touching on the conditions of healthful mental activity. But it is customary, and rightfully so under the circumstances, to offer such tentative guides to successful adjustment as the present state of practical knowledge concerning human nature and its mechanisms makes possible.

The list here presented has been drawn from a survey of the formulations of psychologists who have gained eminence in mental hygiene and related fields[61] and is thus offered as a condensed but composite frame of reference for use in practical psychotherapeutics. The list may be thought of as well as a concentrated résumé of the suggestions advanced in the immediately preceding section dealing with the mental hygiene program.

Maintain Sound Physical Health through Proper Living.—In view of the generally acknowledged fact that mind—defined as a function of neural, or perhaps even more inclusive organismic activity—and body represent an inseparable integration of the physiological organism, it seems that physical health would be imperative to mental well being.[62] It is known that poor physical condition tends to reduce the joy of living, to induce irritability and worry, and to decrease the quality of attempted adjustments. Individuals suffering from ill health are more likely to expend their energies in introspective brooding over troubles and not infrequently use their illnesses to rationalize poor adjustments. The old adage of "a sound mind in a sound body" is no doubt fallacious as an unequivocal rule, but since a sound body is obviously a factor in all around well being we should guard physical health as jealously as we do our morals. It is essential to complete personality integration.

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[61] Although many sources have been consulted, the lists by William Burnham (*The Normal Mind*, D. Appleton-Century Company, Inc., 1924, Chap. 20) and H. L. Hollingworth (*Educational Psychology*, D. Appleton-Century Company, Inc., 1933, Chap. 17) have been most heavily drawn upon.

[62] H. L. HOLLINGWORTH, *op. cit.*, pp. 398–399.

Get a Rational View of One's Own Qualifications.—Although subjective judgments of one's own qualities are usually unreliable, being weighted with wishful thinking and self-appointed halo effects, the well-adjusted individual has some objective insight into his own nature and the way in which its requirements must be harmonized with external circumstances. Such a person can evaluate his own shortcomings or defects as well as his irreducible needs and can make acceptable adaptations based on the requirements of each. He discerns the balances that must be effected between his life drives and social situations. Knowing the fundamentals of human nature, he is on his guard against evasive, compromising mechanisms and is disposed to make a deliberate attempt to face the facts and responsibilities of life.

Maintain a Candid Rather than Self-deceptive View.—The self-deceptive individual meets difficulties and forthwith hies himself into fantasy, rationalization, simulated illness, self-pity, and other forms of blindness to reality—and all the while his lessons go unlearned and his duties unfulfilled. The candid, objective person attacks his problems rationally, eschews caprice, appraises the circumstances of his environment deliberately, and proceeds to manage things in a manner calculated to secure a balance of legitimate satisfactions. The objective attitude leads one to view his personal problems unemotionally and to "see himself as others see him." Candor buttresses one against self-pity—a delusion-inducing sense of injustice—and leads to a rational perspective of the source of one's repertoire of behavior patterns. Morgan[63] delineates the advantages of candor over self-deception as follows: (1) one can learn the habit of success; (2) one retains his mental integrity; (3) one can hope to have some understanding of others; (4) one can keep his self-respect; and (5) one can merit and receive the respect of his fellows.

Gain Confidence through the Habit of Succeeding.—Success has long been recognized as essential to a feeling of personal worth as well as to the development of confidence. As Burnham[64] puts it, "The confidence that results from action and an ordinary degree of success is an essential condition of mental health." One has only to witness the discouragement and feelings of inferiority characteristic of persons who have not been successful to realize the paramount importance for confidence of successful effort. Success, be it ever so moderate, is usually productive of favorable notice from others and thus the life drive for social recognition meets at least some fruition. Success with its attendent joys is the tonic which in the nature of the case gives birth to a wholesome outlook on life. It should be made a habit by all. In the case of children and inefficient adults, moderate problems which hold out fair promise of success should be arranged and repeated until the feeling of achievement has been attained. As a matter of building confidence, some success must be guaranteed.

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[63] J. J. B. Morgan, *The Psychology of the Unadjusted School Child*, The Macmillan Company, 1924, pp. 11–22.

Learn to React Normally to Emotional Situations.—Happy is the man who is able to remain calm and deliberate under conditions of strain and stress. His control of himself is indicative of an integration, a unity of action, and a degree of maturity that mean everything for mental health. Control is the essence of civilized living and means the development of wholesome modes of outlet in place of more primitive and nonadjustive ones. Being unorganized and capricious reactions to situations for which one has no previously learned mode of adjustment, emotions are signs of impending social disaster. The emotional person frequently reacts to trivial situations in violent ways that are obviously out of proportion to the import of the situations. Thus nonadjustive responses are multiplied. The man of poise has the advantage; he can smile at his mistakes and even joke at his own expense. Such humor may effect an outlet for emotional strain thus leading to adjustive behavior.[65]

Avoid Worrying about Problems Not Amenable to Solution.—It often happens that cherished desires and hopes turn out to be beyond possibility of realization. Smart is the man or woman who, after exhausting every reasonable avenue of striving for the same, makes the sensible decision to reduce his or her requirements and be satisfied with something less glamorous. This process has been aptly called "reducing the denominator."[66] If one cannot become a class president, it is the part of wisdom to be happy as a class treasurer or, perchance, a sergeant at arms. If the road to economic affluence is blocked, one might well decide to make intelligent adjustments to such an income as is attainable. And as Hollingworth suggests, "Parents whose boy has an I.Q. of 100 can promote their own mental health appreciably and that of the boy enormously, by abandoning their firm intention to 'prepare him for Princeton.'" Ambition is not to be discouraged, but adjustment to things as they are is essential to mental health.

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[64] W. H. Burnham, *op. cit.*, p. 664.

[65] L. F. Shaffer, *op. cit.*, p. 538.

Develop a Wholesome Attitude toward Biological Functions.—Sex problems are universal and must be faced by all. It is important, therefore, that each individual learn the reassuring fact that sex impulses are biologically normal and that they are no more base than are those arising in any other organ. Sex functions are not unworthy and, when carried on with due regard for social sanctions and standards of modesty, they are adjustive factors. Extreme views should be avoided and control frankly exercised. It has been well said that "romanticism, which extols sex as the prime and only thing of life, prudery which closes its eyes to it and makes sour faces, need special places in Dante's Inferno."[67] Mental ill-health may be aggravated by the acceptance of false ideals of sex virtue when the individual does not possess sufficient resistance to fulfill them. Discrepencies between convictions held and practices followed may lead to serious conflicts with self. For mental health's sake, it is well to shun, not conscience, but the "New England Conscience."[68]

Be Fair and Diplomatic in Dealing with Other People.—One's "state of mind" is decidedly contingent upon the attitudes others take toward one. It is, therefore, essential that one use diplomacy in winning the favorable recognition of people who count. A key to popularity has been found in the practice of limiting personal gratification in a tactful effort to be solicitous of and fair with a desired acquaintance. Another method of influencing favorably those around us lies in first imputing to them knowledge and good judgment and then seeking their advice on matters of apparent importance. Tactfully phrased compliments touching on others' popularity are also very effective.[69] Good impressions may be made on others by remembering that their personal interests are different from one's own and by taking the trouble to exhibit respect for those.[70] Personal morale is dependent upon the good will of other people. Sincere diplomacy and fair play are thus mental-hygiene tools.

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[66] H. L. Hollingworth, *op. cit.*, pp. 392–393.

[67] A. Myerson, *The Nervous Housewife*, Little, Brown & Company, 1920, p. 142.

[68] A. F. Riggs, *Just Nerves*, Houghton Mifflin Company, 1922, p. 121.

Maintain a Balance between Dependence and Independence.—A certain amount of dependence is normal at all stages of life and is probably essential to social cooperation. The child is first dependent upon its mother, later upon teachers and associates, and still later upon community requirements. The adult is dependent upon the fortunes of our industrial order and in his declining years often upon his children or some social agency. All these are right and proper, but they must be tempered and balanced by a sense of personal independence which enables the individual to walk alone. Unfortunate is the youth who has never been weaned from his family. He may be the victim of a fixation or perhaps infantile arrestment of independence. Such an individual can hardly hope to meet the rebuffs and competition of life with courage. Affection for parents and teachers should be retained, but emotional independence and new attachments are imperative to good adjustment.

Plan a Program of Balance between Work and Play.—Here again balance is the key to physical well-being and personal morale. Work with all its fine values must periodically give way to recreation with its hygienic effect on the nervous system. Periods of relaxation permit fatigue elements and emotional strains to drain off, thus aiding the organism in its return to a state of readiness for further concerted effort. Work, on the other hand, when organized around goals or meaningful tasks, provides unity and coherence to the activities of the personality. Thus personal integrity and mental balance are aided and abetted. Work is said to have therapeutic value as well in that it can be made to bring personal satisfaction and to dissipate emotional tensions of the type created by great personal losses and disappointments.[71] But an alternation of work and play, besides meeting nature's demand for rhythmic activity, promotes a mentally hygienic balance.

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[69] G. W. CRANE, *Psychology Applied*, Northwestern University Press, 1932, pp. 215–221.

[70] E. T. WEBB and J. J. B. MORGAN, *Strategy in Handling People*, Boulton, Pierce, 1930, Chap. 3.

Participate in a Varied and Interesting Social Life.—Since normally life activities require joint participation by a group of individuals, it seems logical to assume that it is better for a given person's mental health that he play and work with others, than for him to remain alone or with protective elders. This is especially true of children and youth. They need the constant experience of cooperating, planning, serving, and executing projects with others. Only in this way can they submerge their individual desires in favor of group achievements, learn the requirements of fair play and sportsmanship, and, perhaps most important of all, lose their introspective and anxiety tendencies by giving objective attention to the demands of the present. Besides, social participation of itself yields considerable personal pleasure; it meets the demands of the individual for social recognition.

Espouse Intellectual Flexibility and Eschew "Fixed" Ideas.—Nonadjustive attitudes including that of intolerance, are the natural fruits of inflexible beliefs and fixed ideas. Persons who have developed a "logic-tight" system of beliefs, prejudices, preferences, and superstitions frequently permit these to become so intrenched as to resist even the testimony of substantial evidence.[72] People of this kind are not open to new "convictions" and can hardly be reached by rational considerations. They rationalize their views and fight for their biases regardless of logic or reason. Their unverified major premises are static, coloring all the realms of experiences. Radical religionists are especially prone to fall into this type of "reasoning." The more flexible and intellectually honest man is spared all this agitation, he humbly admits the limitations of his knowledge and proceeds to search for the truth as it emerges from the testimony of verifiable investigations. The open-minded individual eschews rigidity and espouses intellectual tolerance.

Learn to Adjust to the Requirements of the Environment.—Man is characterized by certain needs which he seeks to satisfy.

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[71] J. J. B. MORGAN, *Keeping a Sound Mind*, The Macmillan Company, 1934, pp. 141–147.

[72] A. I. GATES, *Psychology for Students of Education*, The Macmillan Company, 1930, pp. 231–232.

Environmental obstructions in the form of social mores, frustrations of plans, and the caprices of the elements all connive to thwart him. Yet the naked fact remains that the successful individual must learn to adjust himself to all these exigencies. There must, of course, be a proper balance between the demands of the environment and the individual's endurance, thus it becomes imperative that he make every effort to manipulate the environment in favor of his wants and to adapt his needs to the possibilities of his surroundings. The intelligent person considers the requirements of his social and economic order and forthwith tempers his desires to suit the same. Facile adjustment may be accelerated by recognition of Burnham's[73] cardinal principle, "Attention to the present situation." This means that one should attack each situation as it appears, taking care not to indulge in excessive concern for past experiences or future problems.

Achieve a Temperate Realization of Life's Satisfactions.—The older doctrine of continual self-denial with its diet of taboos has not stood the test of wholesome personality production. The same can be said of the extreme-freedom doctrines with their excessive emphasis on self-expression and individual license. The requirements of society and the demands of personal adjustment are such that they call for moderation in matters of self-gratification. Too much, as well as too little satisfaction of primary needs too often eventuates in antisocial behavior or perverted personality adjustments. Satisfaction is imperative to symmetrical growth, but it must be regulated in harmony with group interests. "The person who is able to secure a balanced satisfaction of his motives by carefully planned courses of action will achieve adjustment and effective living, which is good mental health."[74]

Face Life as It Operates in Terms of Causation.—Probably the most potent and inclusive condition of mental health is summed up in the disposition to face the facts of reality by reference to the verifiable facts of experience. Causation operates inevitably in the realm of mental matters as elsewhere, and happy is the individual who rejects credulity and superstition in favor of the inquiring attitude. Such a person is led to suspend his judgment concerning propaganda, "pronouncements of the pompous," and popular generalizations until substantial and verifiable evidence is available. In accordance with the rules of clear thinking, he sets up hypotheses for the solution of his adjustment problems and checks the same until such time as success crowns his efforts. He attempts, in addition, to regulate the conditions which stimulate him to the end that he may exercise maximum control over his responses. Most important of all, he controls and corrects his more emotional and evasive tendencies in favor of a rational attack on the requirements of the social order. While probably the most difficult attainment of the human intellect, the scientific attitude is the most important condition of mental health.[75]

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[73] W. H. Burnham, *op. cit.*, pp. 642–649.

[74] L. F. Shaffer, *op. cit.*, p. 540.

Conclusions on Mental-hygiene Principles.—With this frame of reference before him, the intelligent individual can check his typical modes of response and the quality of his reactions to frustrating conditions with a view to working out a systematic plan of improvement. While the principles have not been scientifically validated, they appear to be sufficiently in harmony with the testimony of mature experience to provide a "weather vane" as it were, for determining a given individual's mental-health status. At any rate, the quality of the adjustments of most people would probably be immeasurably improved if they cared to use such a list as a guide to conduct. And in the case of children it is obviously the duty of their guardians to arrange, as far as possible, conditions which approximate the ideals set forth.

In closing this section, we shall present an abridged check list by means of which the general-adjustment status of a child to his home may be ascertained almost at a glance. This list[76] is not to be regarded as a reliable and valid mental-hygiene test, but rather as an indication of whether a given child is fortunate or unfortunate (from the mental-hygiene point of view) in the kind of home he happened to draw. Based on constructive conditions for mental health, the child is called "fortunate" if his parents can answer "Yes" to the following questions:

1. Is the child a junior partner in family life and its responsibilities?
2. Does he feel secure in his parents' affection without monopolizing the stage?

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[75] W. H. Burnham, *op. cit.*, pp. 668–669.

[76] Issued by the mental-hygiene committee of the National Congress of Parents and Teachers at their Chicago meeting, Sept. 17, 1935.

3. Does he express his own individuality and compete happily?
4. Is he in good general physical condition?
5. Is his usual "emotional tone" peaceful and contented?
6. Is the purpose of necessary punishment to show him that certain activities do not pay?
7. Have his parents learned—and taught him—to ignore some things, not to worry about trifles, and frequently to "laugh it off"?
8. Is he usually happy?

The youngster is pronounced fortunate if his parents are able to answer "No" to the following:

1. Is he shielded, and too much done for and to him?
2. Is he uncertain of his place in the home?
3. Has he learned to get attention through emotional outbursts?
4. Do his parents try to realize their ambitions or thwarted desires through him?
5. Has he become a "problem" because of chronic fatigue or ill-health?
6. Is he overstimulated, subject to ups and downs?
7. Is punishment the result of parental irritation or is he let off because "he is so cute"?

IV. THE PROCESS OF PERSONALITY INTEGRATION

Having given consideration to the significance of the mental-hygiene movement and to the essential principles involved in a logical program of personality adjustment, we come naturally to a discussion of that capsheaf of all human development—the integrated personality. Although aspects of this important subject have been touched upon in previous sections, especially in those dealing with the nature and consolidation of personality traits (Chap. VII), it remains to delineate as best we can the process by which the symmetrical, well-balanced personality comes to be. Such a personality would obviously represent the very embodiment of intelligent mental-hygiene principles and would theoretically be characterized by a degree of adjustment to the demands of its own nature, as well as to the obligations of society, that would mean relative freedom from morale-destroying conflicts and maladjustments. But the process of maintaining integration is more than adherence to a collection of discrete rules of adaptation to practical obligations, it is a phenomenon of experiential growth and of unification of conflicting tendencies. Thus, it merits consideration as the crowning achievement of successful education and rationally controlled experience.

Definition and Nature of Personality Integration.—There has been some criticism of the term "integration" as applied to the personality structure. Like so many other vague and ambiguous words now becoming obsolete in psychology, it is said to lend itself to uncertainty in meaning and to overemphasis as an explanatory concept. These objections are no doubt defensible and should be given a hearing, but, as Burnham[77] brought out some years ago, the word carries with it a connotation that is not easily supplied by other terms. Being derived from the word "integer," it stands for a unit, something that has not been broken into fractions. When expressed as "integrity," it implies oneness of purpose and consistency of behavior. The concept of integration thus suggests unity or wholeness and is antithetic to the ideas of disorganization, discreteness, or atomism.

The term "coordination" has been suggested as a substitute, but it places the major emphasis on a synthesis of atomistic parts, a concept which even nongestaltists would not accept as synonymous with the idea of personality unity. In his famous treatise on the wholeness and unity of the action of the central nervous system, Sherrington[78] chose to use the term "integrative" as symbolic of what he had in mind. Perhaps we are warranted then in using the word integration with the understanding that it stands for a wholeness in personality which gives direction to the coordination of parts.

The integrated personality, we may conclude, is one characterized by unity of action in which the responses of parts or aspects have meaning only in terms of their relation to the action of the whole; all work together under the direction of a central self and in harmony with the plans and purposes of the individual concerned. This means that all the forces and drives of man, which are customarily subsumed under the familiar categories, physical, mental, spiritual, moral, ethical, social, psychological, aesthetic, and the like, represent an amalgamated unit of response and that the classifications mentioned exist as discrete parts in name only. All of which suggests that man has tried to separate in language that which nature presents only in inseparable integration.

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[77] W. H. Burnham, *op. cit.*, p. 32. Read also the comprehensive discussion of integration by the Hopkins group (L. T. Hopkins, and others, *Integration: Its Meaning and Application*, D. Appleton-Century Company, Inc., 1937, Chaps. 1–9).

[78] C. S. Sherrington, *The Integrative Action of the Nervous System*, Charles Scribner's Sons, 1906.

Physiological integration in the sense of wholeness of action is inherent in the natural order of even the lower forms of animal life, but what we have called "psychological integration" must be won and maintained in a world characterized by discrepancy between dynamic cravings and conditions under which these may be consummated. As Dewey[79] expresses the conditions of integration, "A unified mind . . . can come into being only when conscious intent and consummation are in harmony with consequences actually effected."

An apparently simple, but actually complex illustration of the purposeful and adaptive nature of integrated action, when harmonized in response to a complex stimulating situation, has been given by Tansley:[80] "For instance, if I go into a shop to buy something, all my actions in the shop—walking across the floor, asking for what I want, examining the things I am shown, saying which I will have, taking money out of my pocket and putting it on the counter, receiving my change, picking up the things and walking out of the shop—are integrated [*i.e.*, dominated by a central purpose] forming the main action of the purchase of the article. Each of the single actions mentioned will be unconsciously performed if my consciousness is wholly occupied by the act of purchase as a whole." Similar examples may be seen in the child working at his project, the artisan at his bench, the traffic officer on his corner, and the rest of us when we are attending dynamically to a task at hand. Integration appears to be a matter of the subordination and combination of subactions in favor of the consummation of a greater task which, incidentally, gives them direction.

In contemplating the implications of psychological integration, we must realize that within the total field there are two interdependent types of integration encumbent upon all of us—integration with ourselves and integration with the demands of the world outside of us. While it is true that "Integration *within* the self is accomplished through integration *with* the objective world,"[81] the critical student of personality will recognize these related forms and see to it that each is accomplished as far as possible by each individual. This must be done by constructing from the elements of experience as unified a view of life as possible and by effecting a sufficiently satisfactory adjustment to driving needs to ensure a state of emotional equilibrium within the self. All of which means that integration in the larger sense is greatly facilitated by a culture, "whole ideas and values are woven together into a consistent pattern."[82]

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[79] J. Dewey, *Individualism Old and New*, Minton-Balch, 1930, p. 58.

[80] A. G. Tansley, *The New Psychology*, Dodd, Mead, & Company, 1924, p. 39.

Physiological vs. Psychological Integration.—It is a matter of common knowledge that throughout all biological development the crowning characteristic of normality at any stage of genetic growth is physiological integration in making responses to the environment. This is evident even in the apparently simple tropisms of plants and animals. As the insect makes his mechanical response to the light stimulus, all the detailed actions of minute organic structures act together as an integrated unit in effecting the unified composite response. And so it is in the newborn baby—in the sucking reaction, for example, a series of tongue, lip, and cheek movements, together with scores of other reactions concerned with the maintenance of posture, are coordinated in a composite sucking-swallowing response. Biologically, living organisms are so constituted that responses to stimulation result in that dynamic pattern of coordinated movement which we are wont to call integration and which makes for adaptation to varying environmental conditions.

The mechanism basis for this original wholeness or integration of response seems to be apparent. According to Child,[83] it rests on the principle of the metabolic gradient with the brain as its crest. As the dominant pole of the vertebral column, the brain is the director of energy and the coordinator of neuromuscular movements; through its action the phenomenon of integration becomes possible. Sherrington,[84] who has long emphasized the integrative function of the nervous system, corroborates this view when he says, "The nervous system is that bodily system the special office of which . . . has been more and more to weld together the body's component parts into one consolidated mechanism reacting as a unity to the changeful world about it. . . . There, in the brain, the integrating nervous centers are themselves further compounded, interconnected and recombined for unitary action." We see, then, that physiological integration is an inherent condition in the organic world. A moment's reflection will indicate as well that the nature of nervous-system action would tend to make for psychological integration as well. But as we shall see, this field has to withstand the disintegrating influences of so many functional disturbances that its equilibrium is more easily upset.

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[81] W. C. Bower, *Religion and the Good Life*, Abington Press, 1933, p. 202. Copyright 1933. Reprinted by permission of the publisher.

[82] *Ibid.*

[83] C. M. Child, *Physiological Foundations of Behavior*, Henry Holt & Company, 1924.

[84] C. S. Sherrington, Some Aspects of Animal Mechanism, *Science*, 56: 352–353, 1922.

Just as physical and chemical processes within the organism adjust themselves to functional adaptations to outer demands so the reactions commonly called "mental" or "psychological" combine in integrated ways to effect adjustive responses to social and moral situations.

When the child is young and before he has emerged as a mature and differentiated unit in the social sphere of things, he makes specific and more or less mechanical psychological responses to the demands of the environment, just as any normal biological organism does to physical stimuli of varying intensity. His responses, moreover, are integrated in the sense that he is able to retain experience and thus make like reactions to like situations.[85] But his integration is on such a low level of genetic development that he can only make these specialized responses to corresponding specific situations, he cannot recombine his "one-to-one" experiences in such a way as to adjust to novel situations.

It is easy to see why the small child's behavior repertoire is so specifically discrete and inadequate for managing the environment as a whole. With his lack of maturity and inner complexity of organization, he can only respond to the "coarser and more utilitarian aspects" of his environment. He makes unified responses but always in ways analogous to previous responses made under similar conditions. If changing situations introduce moral or logical implications, which we, as adults, recognize and take into account in our responses, the child merely reacts in terms of his degree of social maturation and in ways corresponding with previous situations devoid of these considerations. As Hartshorne and May[86] say, children are integrated in the sense that they behave consistently in specific situations but, since there is no evidence that they regulate their responses in harmony with guiding principles or rules of conduct, their conduct is in the end merely "channeled in grooves representing specific experience."

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[85] H. Hartshorne and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, p. 356.

The Influence of Social Mores on Personality Integration.—Since normal individuals ultimately reach a stage of adaptation to complex situations that far transcends the child's simple collection of discrete-response systems, it is evident that integration is a relative matter, that "The normal development of personality from childhood is through a sequence of integrations at higher and higher levels."[87] Although none of us ever reach and maintain complete integration, we can see that the approximation of such a desired state is necessary for full realization of one's powers as well as for harmonious adaptation to the demands of the social environment. We are led to inquire, then, why are children's original unit integrations so inadequate as they (the children) grow older? And how is a higher degree of integration to be achieved?

In attempting to answer the first of our two questions we would reason as follows: before the child is mature enough to comprehend the coercive influences of those social mores which we have come to call laws, regulations, rules, ideals, and the like, he proceeds on a primitive, but to him consistent, program of organic satisfaction getting. His behavior is integrated in that he makes coordinated unit responses to a variety of situations to which he has become accustomed. On a test of specific reaction consistency, he would rate high. But the critical point is that he has not been hampered by the necessity of ordering his conduct in harmony with adult-conceived social endorsements.

As soon as he is required to begin this, the meaning of both consistency and integration change somewhat. *Whereas his consistency was formerly evaluated in terms of hewing to his unmoral line of behavior in repeated situations it must now run the gamut*

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[86] *Ibid.*, pp. 358–359.

[87] W. H. Burnham, *The Wholesome Personality*, D. Appleton-Century Company, Inc., 1932, p. 181.

of conformance to a galaxy of social endorsements the requirements of which place heavy demands on his powers of inhibition, as well as his adaptive capacity. This is the problem of integration: the child must learn gradually to adjust his nature to the demands of a more exacting, a more complex, and a more social order.

The original units of reaction are obviously inadequate, in fact, some of them are antagonistic to the obligations of the world of increasing social regulations. Thus the developing child's new found inconsistency is a product of the arbitrary, but necessary, requirements placed upon him by his elders. His attainment of higher levels of integration becomes a matter of gradual adjusting to the new demands and of forming larger and interrelated hierarchies of adaptive response; in short, of organizing his behavior around a select group of rationally determined and socially desirable generalizations. As Curti[88] puts it, "It is only when he begins to generalize from his experience, and standards, desires, sentiments, purposes, or ideals begin to take shape, and when he learns to judge new situations in the light of these generalizations, that integration is possible." These considerations suggest the answer to our second question.

We can see now why personality integration is a slow process. Like the consolidation of specific trait actions into relatively homogeneous and predictable hierarchies (as described in Chap. VII) adjustment to the obligations of social regulations takes time and involves the accumulation of a wide variety of specific experiences associated with fundamental moral and social principles.[89] Like character building, integration is the work of a lifetime and is never completed. As we have said before, according to Charters,[90] the process is greatly facilitated by the fact that the desire for integrity is numbered among man's group of original tendencies. As proof of this assumption, he cites the proclivity of mankind to set up ethical principles around which the multitudinous experiences of life may be developed. Even the unschooled layman demonstrates his interest in integrity when he censures inconsistency in others. And all of us have noticed our tendency to rationalize inconsistent acts in favor of an explanation that appears consistent to others.

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[88] M. W. CURTI, *Child Psychology*, Longmans, Green & Company, 1930, p. 503.

[89] It is of considerable importance that the interested student follow, in this connection, the results accumulating from Thurstone's factorial analysis technique. Thurstone has already found that a vast array of specific personality "traits" may eventually come to cluster around a few statistically distinguishable attitude components. (L. L. THURSTONE, The Vectors of Mind, *Psychological Review*, 41: 1–32, 1934.)

[90] W. W. CHARTERS, *The Teaching of Ideals*, The Macmillan Company, 1927, pp. 338–339.

Reasons for this interest in personality consistency are not hard to find. In the first place, we gain added recognition and standing with our friends and associates if they see that we are sufficiently dependable to warrant their trust. Furthermore, dependable people are frequently rewarded by promotions and salary increases. In the third place, one's own morale and belief in himself is augmented when he knows that he is relatively free from "unnecessary vacillations and indecision born of dissensions among his operating traits." The man who has achieved harmony with the cardinal virtues of living can throw himself into his work with a zest and an enthusiasm that provides meaning and point to life. Such an individual orders his behavior in the light of a few guiding principles and forthwith applies them with a consistency that approximates the ideal which we have been extolling—the integrated personality.

Dominant Motives as Unifiers of Personality.—It is the belief of many students, particularly those of philosophical or theological persuasion, that personality is best unified through the avenue of wholehearted participation in some great cause. They reason that devotion to a gripping activity, in which the individual believes "with all his heart," will act to give point and stability to personality. In harmony with the view of many others, Chapman and Counts[91] have suggested that such a dominant motive may well be found in religious devotion. As they have it, happiness comes to him who enlists himself unselfishly in some great activity, and, if that activity be a religious one, the devotion in question naturally becomes focused upon great and worthy ends. In this way, men lose their concern for the narrower and more bestial interests in their concern for a broader brotherhood and service to their fellow men. It is further suggested that such a devotion to a God-given cause, as well as to ideals of transcendent worth, will serve not only to resolve personal conflicts, but to color one's whole attitude toward life. In this way, man is said to obtain a tranquility of mind and a security of life which temporal things can hardly afford.

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[91] J. C. Chapman and G. S. Counts, *Principles of Education*, Houghton Mifflin Company, 1924, pp. 344–346.

The value of such experience for the consolidation of personality is obvious provided that the individual really believes in the objective reality of the processes of his religion and that he is attracted as much by the functional, behavioral aspects thereof as by the dogmatic or institutional side. The intolerant tendencies of a formal, ecclesiastical religion are too well known to avoid detection as distintegrating factors in personality. But the individual who can throw himself heartily into the program of a charitable cause is the fortunate possessor of a dynamic nucleus around which he can organize the many ramifications of his life, be they vicissitudes or victories. Such a person may find integration through losing himself in the quest for a broader, more magnanimous life.

Naturally some would be inclined to doubt the alleged efficacy of religious devotion for personality unification, or at least to suggest that other more tangible and less dogmatic causes might well serve as motives in organizing experience. They would mention social work, teaching, medical practice, and many of the professions and vocations, not to mention business enterprises. In discussing the question of whether religious affiliation is essential to law obedience and to successful rearing of children for moral maturity, Bagley[92] presents statistics indicating that "the states and sections of our country where religious fundamentalism shows the fewest signs of 'collapse' are the states and sections which have the heaviest ratios of the most serious crime (homicide) and which, in proportion to their population have apparently produced the greatest number of criminals."

Although Bagley does not for a moment assume that religious affiliation is related to crime in any causal sense he does doubt the theory that decline of religious fervor means a concomitant "breakdown" in morals. This writer believes that "ingrained respect for law" and the successful generation of moral maturity can be achieved outside of religious circles, and that, while the teachings and tenets of religious groups are strong factors for ensuring character development, good home discipline does not necessarily rest on a religious foundation.

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[92] W. C. Bagley, *Education, Crime, and Social Progress*, The Macmillan Company, 1931, pp. 43, 44, 64, 65. Quoted by permission of the publisher.

This view is much more generous toward religionists than that of some others who find disintegrating elements in theological structures. Wells,[93] for example, while not disparaging religion, has pictured it as a regressive mechanism by means of which harassed "souls" find peace and comfort in returning to trust in a divine father, just as they previously leaned on their earthly parents for shelter from the hurts of life. This view may have something to commend it in the case of suffering individuals who have found this life almost unbearable, but it hardly makes sense when we contemplate the many stalwart, confident personalities who, while successful in material endeavors, still choose to believe in the postulations of the Christian religion. They might be regarded as being credulous, but they do not necessarily possess regressive personalities.

As an outstanding example of proposals for ensuring personality growth through channels other than religious, we would mention that of Burnham.[94] In his more recent writings, he still continues to emphasize the superior value of the "task" as a factor in mental hygiene, as well as in personality building. To quote him, "In the briefest terms, the great means of developing the personality is the doing of worthwhile tasks." Such a program, says Burnham, is in harmony with the child's fundamental urge to engage in unrestrained activity. On this drive, which includes the need for spontaneous play, rests the whole idea of Dewey's activity school with its pursuit of felt needs, its purposing and executing of child projects, its interest-born activities, its reconstruction of experience, and its absorption in utilitarian pursuits. Thus freedom to engage in purposeful tasks is said to provide the motive through which rational integration of the child's powers and tendencies may be attained.

Reasoning as the Sine Qua Non of Integration.—Reasoning is the process by virtue of which the diverse functions of the personality may come to act as a unit. Through a critical examination of the facts of experience, the individual may learn to order all the resources of his being in such an intelligent way as to insure integrated action in the carrying out of planned activities. If it had no competition, the intellectual component of personality could, it seems, regulate the responses of the individual in such a rational way as almost to guarantee harmonious adjustment to all the obligations of practical life. But as everyone knows and as recent writers[95] have stressed, there are strong affective factors in personality which continually make a decided bid, as it were, for expression. Feelings and reason compete and very often to the discomfiture of the latter.

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[93] F. L. Wells, Mental Regression; Its Conceptions and Types, *Psychiatric Bulletin*, 1916, pp. 445–492.

[94] W. H. Burnham, *op. cit.*, pp. 193–195.

Nevertheless, it behooves all of us to cultivate every increment of rational power that we can muster, since in its "domain" lies our greatest bid to successful organization of personal resources. It is through the exercise of reason that we "set up and modify our final goals, settle conflicts among our ideals, discover principles of action, and evolve efficient methods of behavior. The tendencies with which we are born will not carry us far along the road to integrity; the major portion of the way is covered by intelligence and reason."[96] But as Piaget[97] has so adequately shown, the ability to carry on logical thinking, like integration itself, is not native to the child, it must be developed from social maturation and out of the elements of experience. Not until the child approaches his teens does he slough off his illogical deductions and vague, unanalyzed concepts in favor of true rational thought with its demand for evidence, its axiom of natural causation, its testing of hypotheses, and its method of varied approach. In the end, however, the capacity for clear thinking is one of the resources upon which personality depends.[98]

The Functions of Rational Thought in Integration.—Charters[99] has stressed four points at which rational organization assists in the process of integration. Briefly, these are as follows:

1. Perhaps most important of all, reason, through the complementary processes of induction and deduction, provides the

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[95] See, as an example, T. H. Briggs, *Secondary Education,* The Macmillan Company, 1933, Chaps. 18–21.

[96] W. W. Charters, *op. cit.*, p. 341. Quoted by permission of the publisher.

[97] J. Piaget, *The Child's Conception of the World,* Harcourt, Brace & Company, 1929.

[98] A. G. Melvin, *Building Personality,* John Day Company, Inc., 1934, p. 184.

[99] W. W. Charters, *op. cit.*, pp. 341–347. Quotations used by permission of the publisher.

guiding principles which may come to govern specific and originally discrete trait actions. This clustering of one's multitudinous specialized and unrelated acts about a few rules obviously means everything for personality integration. It is illustrated by the mother's procedure when she teaches her child first to recognize the similarity in such admonitions as "Turn off the lights," "Put pennies in the bank," "Eat all the food on the plate," and "Do not waste notebook paper," and subsequently to group all these "specifics" under the rule "Be thrifty."

2. A second function of reason is that of expanding the above process by applying in numerous situations a trait action which has only been recognized as applicable to a limited number of settings. Due to the fact that specific learnings do not automatically transfer to other potential situations, this spread must be accomplished by teaching in which the individual is shown in some detail just how the skill, procedure, or ideal in question may be applied to a wide variety of situations. But once this is done, the possibilities of generalizing behavior become very promising.[100] The ideal of testing all proposed hypotheses may, for example, be applied in the fields of biology, chemistry, mathematics, psychology, botany, education, sociology, business administration, theology, and in the problems and assumptions which arise in the common conduct of every day life. As more and more particular situations become attached to a few guiding generalizations, consistency of behavior—integrity of personality—reaches a continuously higher level of development.

3. Intelligent reasoning may be very effective in resolving conflict between two or more traits. This is an important point; it means that through reflection and thought one may attain to greater unity of living. It frequently happens that two perfectly good conduct ideals run counter to each other. Under such conditions a sense of value or fitness born of calm reflection is the only key to a solution. As Bode[101] puts it, "The point at issue, it should be noted, is not whether we should be loyal to our ideals, but whether we should be loyal to one ideal at the expense of the rest. . . . If conduct is to be rational or intelligent, it is

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[100] For an excellent summary of this question read P. T. Orata, Transfer of Training and Educational Pseudo-Science, *Educational Administration and Supervision*, 21: 241–264, 1935.

[101] B. H. Bode, *Fundamentals of Education*, The Macmillan Company, 1921, p. 40. Quoted by permission of the publisher.

necessary to use our ideals so as to discover the values that are at stake in a given situation, so that we may seek to conserve those values to the best of our ability. . . . We may be so subservient to the ideal of charity that we consider it our duty to feed every tramp that comes long, without regard to the effect of this practice on society in general . . . or so regardful of property rights as to be insensitive to the injustices of economic distribution." Bode is arguing for an intelligent sense of the fitness of things which facilitates the solution of problematic situations. Such a rational resolution of conflicts enhances the cause of personality integration.

4. Charters calls his fourth point "Broadening major ends." By this is meant the development of ability, through reasoning, to contemplate our problems in the larger and what we might call the long-range view. All too frequently we attempt to solve our difficulties in the light of a limited perspective and with a narrow conception of human values. By inquiring deeply into the implications of life and morals, we may come out with an enriched comprehension of the ultimate objectives of living. Such a program of reflection and query is one of the avenues to the consolidation of character and personality—the end of all human striving. So we may come to harmonize loyalty to a cause with kindness to an enemy, respect for the law with consideration for the lawbreaker, and admiration for tolerance with justice to the intolerant. And as we grow in breadth of view, we begin to comprehend the possibilities of applying our virtues to an increasingly wide range of significant social issues. As the author of this concept concludes: "When I see for the first time that justice applies to enemies, that courage is applicable to moral issues rather than to physical situations alone, that stealing applies to other people's time as well as to their money, that honesty is involved in labor disputes, and that patriotism is appropriate to peace as well as war, I am overhauling the great objectives of my character and seeing together under them the conditions and events in life that theretofore were separated from each other."[102]

Obstacles to the Rational Organization of Personality.—We see, then, that integration is accomplished by the rational organization of the details of living in harmony with major principles of action. If the personality is to be an evolving, dynamic integration of all the resources of one's being, reason must be its dominant and directive force. But it must be recognized that, although rational analysis logically occupies the position of dominance in personal integration, it is by no means always available for such purpose. As we well know its intelligent ministrations are all too frequently circumscribed by almost impregnable prejudices, preferences, indoctrinations, fixed ideas, ignorance, and emotionalized attitudes. These factors keep altogether too many otherwise capable people on a low level of integration. It is obviously the function of education to do what it can to prevent the development of these stumbling blocks to symmetrical development.

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[102] W. W. Charters, *op. cit.*, pp. 346–347. Quoted by permission of the publisher.

On the other hand, the possibilities of intellectual control are often rendered almost null and void by the absence of what Morrison[103] and others call "volitional" control; *i.e.*, the individual does not realize his possibilities of development because he has no "push" or "drive" behind his knowledge, he does not do what rational considerations indicate that he should do. Thus, the boy who knows full well the nature of germ-induced disease fails, after cutting his hand with a soiled knife, to take the precaution of applying an antiseptic, and the girl who knows all too well that if she is to have friends she must show herself friendly fails to do so. It is a matter of arrestment of development of the disposition to put effort behind logical approaches to consistent action. If rational coherence is to be attained, the "thought structure" must be buttressed by the "volitional structure." Although in an organismic sense these are inseparable, the former is apparently contingent upon the functioning of the latter.

V. FACTORS IN PERSONALITY INTEGRATION

In rounding out our discussion of the psychology of human adjustment it seems appropriate to touch briefly on the influence of attitudes on personality integrity and on the implications for adjustment of wholesome vs. perverted dispositions. We should like also to amplify the preceding paragraphs dealing with the place of rational analysis by the inclusion of some suggestions concerning the advantages of clear thinking as well as the adverse effects on consistency of indulgence in perversions of the rules of correct thinking. But first we shall say a few words about the importance of making satisfactory adaptations to the requirements of practical living.

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[103] H. C. Morrison, *Basic Principles in Education*, Houghton Mifflin Company, 1934, pp. 292–299.

Integration with the Functional Aspects of Life.—We have dwelt, in preceding pages, on the importance for personality integration of internal peace, that is, of freedom from conflict over matters destructive to personal integrity. It is evident, however, that the contented individual must in addition be in harmony with the demands of practical situations in our modern world. Thorndike and Gates[104] have suggested five such areas of functional activity to which man, if successful, must of necessity make satisfying adaptations.

1. *Adjustments to the Physical World.*—In addition to ability to utilize the many mechanical appliances of today, man must have a knowledge of scientific facts, sufficient insight to apply them to the problem of everyday life and capacity for making adjustments to their requirements.

2. *Adjustments to Economic Situations.*—The successful individual needs to achieve an understanding of the industrial problems and trends of his time and subsequently to prepare himself for participation in a profession or vocation through which he can find economic security for himself and his dependents.

3. *Adjustments to Family Situations.*—To achieve genuine satisfaction of the most wholesome and vital needs of life, man must learn such facts and develop such habits and attitudes as are requisite to harmonious adaptations to the social and biological aspects of family life.

4. *Adjustments to Social Situations.*—Supremely important is man's obligation to promote good will and fellowship toward all and to seek for conditions conducive to the welfare of humanity. Only thus can he participate constructively in the solution of the insistent issues of the greater society and achieve personal integrity.

5. *Adjustment to Civic Situations.*—In a democratic country such as ours, preparation for efficient and wholesomely disposed

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[104] E. L. Thorndike and A. I. Gates, *Elementary Principles of Education*, The Macmillan Company, 1929, Chap. 3.

participation in the solution of common civic problems becomes one of the first duties of man. Effective cooperation in this respect is both a cause and an effect of individual integration. And as the above writers conclude, "As means of contributing to these ends, and as ends in themselves, we must enable each person to achieve such sustaining resources as sound physical health, sound mental health and balance, a suitable philosophy or religion, proper recreational reserves and an adequate intellectual equipment" (page 46).

The Harmonizing Function of Constructive Attitudes.—Although there appears to be little unanimity as to just what is meant by "attitude," we can give the word a provisional connotation and proceed with our discussion of its implications. We know that children pick up certain feelings toward people and things as a result of affective experiences in connection with them. As these multiply and become crystallized into specific reaction tendencies, we may think of them properly as "organism sets" which come to determine behavior in a wide variety of ways. It is these *dispositions to act in characteristic ways,* of which the child's conduct is an expression, that we shall call "attitudes." This definition has been criticized by Sherman[105] in that a child's verbal opinions do not always synchronize with his overt actions, but the bulk of our evidence indicates that, in general, "if we can understand the child's attitudes, we have the key to his conduct. . . ."[106]

The significance of attitudes for personality integration is evident. No stone should be left unturned to ensure the development of socially desirable dispositions and to prevent the appearance of cross currents in the form of conflicting attitudes. Maller[107] has pointed out the implications of the child's conflicts between individual honesty and group standards. Others, as for example, Wallin,[108] have emphasized the necessity of teaching children to develop attitudes of frankness toward life's obligations and constructive views toward the ends of purposeful living. And all these admonitions are evidently based on the thesis that emotionalized dispositions—attitudes—have significant consequences for behavior and integration.

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[105] M. Sherman, *Mental Hygiene and Education,* Longmans, Green & Company, 1934, pp. 86–88.

[106] J. J. B. Morgan, *Child Psychology,* Farrar and Rinehart, Inc., 1934, p. 466. Copyright 1934. Reprinted by permission of the publishers.

[107] J. B. Maller, The Measurement of Conflict between Honesty and Group Loyalty, *Journal of Educational Psychology,* 23: 187–191, 1932.

[108] J. E. W. Wallin, *Personality Maladjustments and Mental Hygiene,* McGraw-Hill Book Company, Inc., 1935, p. 156.

Among the attitudes known to be favorable to wholesome development might be mentioned (1) the disposition to face the facts of reality in all the functional areas of life, (2) the disposition to be reasonably confident of one's ability to meet the issues and vicissitudes of living, (3) the disposition toward a judicious trust of others, (4) the disposition to recognize the social and lawful rights of others, (5) the disposition to be diplomatic and altruistic in dealing with others, (6) the disposition to maintain an unbiased, flexible attitude, and (7) the disposition to forgo emotional intensity in favor of a balanced sense of humor.

Attitudes known to be inimical to wholesome integration and thus to be studiously avoided include, (1) the disposition to daydream excessively, (2) tendencies toward cruelty and hatred, (3) the tendency to blame others for shortcomings, (4) the disposition to feel definitely inadequate (inferiority), (5) the disposition to give up life's struggle, (6) the tendency to be chronically suspicious, and (7) the excessive disposition to hide behind plausible excuses. These attitudes are avenues to disintegration. One should shun them all.

Principles of Rational Thinking as Factors in Personality.—A cardinal principle of clear thinking is involved in the capacity to discriminate between truth and belief. The naïve person regards beliefs as statements of ultimate fact or truth. Actually a belief has little to do with true fact, no matter how many people may be persuaded to espouse it. Truth has reference to objective reality which can only be established by means of patient and dispassionate search characterized whenever possible by the employment of scientifically valid and verifiable techniques. The fact that thousands of thinking men once preferred to believe that the earth was flat did not make it so and the present tendency toward the comfortable belief that sumptuous allotments to our old people will solve the nation's economic ills is no assurance that such will be the case. Emotionally preferred beliefs which act as erroneous major premises in the thinking of so many well-meaning people are a serious hindrance to successful adjustment to reality as it operates in terms of causation.[109] Integration is dependent upon sound thinking and thus education must exert itself to the utmost to promote interest in objective methods of reasoning.

As an introduction to rational thinking, the student and others might consider the merits of such rules as the following: (1) willingness to acknowledge the testimony of facts,[110] (2) willingness to recognize negative as well as positive evidence, (3) freedom from unanalyzed emotional prejudices, (4) willingness to be intellectually honest about beliefs, (5) maintenance of a nondogmatic, questioning attitude, (6) critical attitude toward fallacies in popular slogans,[111] (7) strict adherence to the principles of law and causation, and (8) a judicious application of the law of parsimony wherever possible.

Typical perversions of the rules of clear thinking have been discussed by Trow[112] and by Morgan.[113] They include (1) ignoring facts in favor of wish fulfillment, (2) distorting facts to agree with prejudices, (3) hasty generalizations from insufficient evidence, (4) regarding analogies as proof instead of as illustrations, (5) regarding natural processes as material entities (mind, will, etc.), (6) the negative tendency to disbelieve everything, and (7) yielding to delusions of grandeur and persecution. All these are obviously subversive of the development of a clear conception of the natural order of things in our world, as well as being detrimental to consistency in organizing the items of experience around a coherent set of principles of action. They are stumbling blocks to personality integration and should be avoided accordingly.

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[109] For a fuller account of this important point, see L. P. Thorpe, Education and Naïve Belief, *Phi Delta Kappan*, 18: 79–82, 1935.

[110] This principle is beautifully illustrated in the words of Darwin, "I have steadily endeavored to keep my mind free so as to give up any hypothesis, however much beloved . . . as soon as facts are shown to be opposed to it" (F. Darwin, *Life and Letters of Charles Darwin*, D. Appleton-Century Company, Inc., 1887, vol. 1, p. 83).

[111] The extent of belief in slogans and statements based on superstitions among even college students may be seen in an investigation by A. R. Gilliland, A Study of the Superstitions of College Students. *Journal of Abnormal and Social Psychology*, 24: 472–479, 1930.

[112] W. C. Trow, *Scientific Method in Education*, Houghton Mifflin Company, 1925, pp. 72–95.

[113] J. J. B. Morgan, *Keeping a Sound Mind*, The Macmillan Company, 1934, pp. 202–214.

VI. SUMMARY AND IMPLICATIONS

With the ideal before us of building positive and virtuous habits into the personalities of the children and youth and, as far as possible, adults of our nation, we can appreciate the significance for human welfare of the mental-hygiene movement. Its influence can be made to reach into the realms of school and college, business and industry, government and politics, home and intimate personal relations, and into the social structure in general. In all these practical areas of activity conditions can and should be set up that are conducive to the engenderment of integrated, consistent individuals. If social improvement is to be made, it must come in part through the introduction of mental-hygiene principles into the commonplace as well as the most intricate ramifications of life.

At present cross currents in our social order are invalidating much of the effort toward consolidation in character put forth by our progressive teachers and parents. Some of these mentioned by Bagley,[114] are found in (1) the increasing mobility of our population which prevents the continuous operation of social pressures leading to stability of conduct, (2) the diverse standards of conduct represented by different groups which make for confusion in the outlook and attitudes of our observing youth, (3) the American tradition of lawlessness which reserves the right to decide the laws that are sufficiently encumbent upon one to merit recognition and conformance, and (4) a material prosperity which, if not properly regulated, may lead to a spirit of individualism and expediency, which in turn increase the moral hazards of modern life. Then there are the many inconsistencies, as for example, the disparity between hard, competitive business ethics and the altruistic declarations of brotherhood made at service club dinners by their adherents, so deeply imbedded in our democratic order.[115]

All these conflicts combine to prevent the ordering of life in grooves channeled by consistent and flexible standards of living.

[114] W. C. Bagley, *op. cit.*, Chap. 2.

[115] B. H. Bode, The Confusion in Present Day Education, in *The Educational Frontier*, (W. H. Kilpatrick, Ed.), D. Appleton-Century Company, Inc., 1933, Chap. 1.

They make it difficult for young people to put their intelligence and rationally conceived convictions behind coherent major goals of striving. If society is improvable and is to be improved, it is probably fair to say that a new premium must be placed upon consistent and socially desirable goals of living. With clarity of purpose, respect for truth, distrust of unfounded prejudices, and adherance to the principles of constructive living, the individual can drive on toward higher integration and social constructiveness.

Questions for Stimulating Thought and Discussion

1. In what respects are mental-hygiene principles analogous to those that have proved effective in the physical-hygiene field? Can such principles be used successfully in rebuilding maladjusted individuals or are they restricted to preventive work only? Elaborate your answer.
2. Are the symptoms of emotional maladjustments sufficiently clear-cut and understandable that the average teacher can recognize and deal intelligently with them? Defend the view that teachers can and should be fairly skillful mental hygienists.
3. Show how in your judgment a controlled environment, suitable on psychological grounds to the development of wholesome personality, might be set up in an average American community. What essential factors, if any, would not be amenable to control? Be specific.
4. Is there any evidence supporting the accusation that teachers occasionally not only neglect children who are displaying decided personality disorders but that they actually contribute to their pupils' emotional disturbances? Under what conditions would such a situation be likely to develop? How can it be prevented?
5. If you were to boil down the cardinal principles of mental health as delineated in this chapter to two or three fundamental propositions for interested parents and teachers what would these be? To what extent could you assure these individuals that close adherence to the principles would insure a hygenic state of affairs in their charges?
6. Look over the principles again and notice to what extent they touch on the importance for mental health of directing one's life energy outward into channels of useful activity and social participation. Why is it so unwholesome for an individual to turn his thought *in* upon himself in terms of self-analysis and self-concern? Show that this is an important point.
7. Just what is meant by a well-integrated personality? In offering an answer be on your guard against a superficial conception of true integration. What is the relation between the development of personality consistency or integrity and the pressure of social requirements? Be explicit.
8. Is it scientific to suggest that dominant motives in the form of religious devotion, interest in a great cause, or altruistic ambitions are the true

unifiers of personality? Explain how this could or could not be. How does your answer harmonize with Charters's declaration that rational organization is the *sine quo non* of integration?

9. Point out how obstacles to rational personality organization operate in the everyday life of a typical individual. What are the implications here for early indoctrination? Does your logic destroy the desirability of building "convictions" into children and youth? Why?
10. If attitudes are so important for individual integration and social harmony why should they not be emphasized in preference to intellectual insights in our school system? This raises the question as to whether the race has progressed most through intellectual control or by way of great achievements in "moral" living. What do you think?
11. What criticism would you offer to the declaration of one of America's greatest divines that any man's personality may become integrated and consolidated if he is in possession of (1) constructive goals toward which to strive, (2) courage and zeal to drive on at all odds, and (3) a philosophy of life that looks upon all handicaps as mere obstacles to be overcome? What improvement can you offer to this program?
12. Give concrete examples of either living or deceased individuals who in your judgment are outstanding examples of wholesome, integrated personality. Suggest, in the light of psychologically sound principles, how they probably got that way. Could we, if provided with the opportunity of controlling an environment, produce approximately similar individuals? If so, how?

Recommended Readings

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CHAPTER X

PHYSIOLOGICAL APPRAISALS OF CHARACTER AND PERSONALITY

I. MAN'S TENDENCY TO APPRAISE HIS NEIGHBOR'S QUALITIES

Ever since the dawn of historical times, man has been busy analyzing his neighbor's character and personality through observation of his physical features. Julius Caesar revealed this trend of mankind when he made his brief and now classical personality characterization of his friend Cassius by associating that "lean and hungry look" with a disposition to think too much. And so men have always attempted to penetrate the inner natures of their fellows through one or another of their physical characteristics. Aristotle was probably the first to formulate a systematic treatise advancing the belief that one's personality is paralleled in a number of ways by his physical constitution.

Naïve Beliefs of Characterology Systems.—More modern advocates of the theory of personality analysis through observations of physical attributes have depended upon much the same sort of reasoning and method of verification as those used by Aristotle. As Brandenburg[1] says, "Observing that in certain animals a certain mental trait is accompanied by a given physical characteristic, they have inferred that there is a causal relationship between the two and that the relationship is universal in the animal world. For example, the lion which has coarse hair and blue eyes, is courageous, therefore, blue eyes and coarse hair are indicative of courage wherever found."

Extension of this line of observation to human races seemed to lend further verification to the theory. Thus, aided by additional speculation and analogous reasoning, a fascinating and plausible system was formulated. It became so attractive that in premodern times it was espoused by many supposedly intellectual and scientific men. Even today, in spite of the fact that scientists have substituted a much saner conception of the complex human organism, the theory has not lost its attractiveness for the masses. This statement is attested to by the considerable number of newspaper and magazine articles on "character analysis" that are eagerly consumed by the more credulous in our population. Furthermore, every large center has its "expert" character and personality analysts.

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[1] G. C. BRANDENBURG, Do Physical Traits Portray Character? *Industrial Psychology*, 1: 580, 1926.

We must realize, of course, that these systems have arisen in part out of a practical need for methods of "sizing up" men and women and for doing so quickly. Thus it is not at all surprising that industrialists and others have turned their attention to apparently economical methods of estimate. The resulting character and personality cults are described by Dunlap[2] as follows: "Palmistry and phrenology are characteristic and well known systems by which attempts have been made to estimate, in a rapid way, the character, temperament, physical stamina and mental abilities of individuals. Estimation based on the study of handwriting according to fixed rules has also had a wide vogue. Moreover, through the work of Lombroso and his studies of 'criminal' man, the use of anatomical signs other than those of the hand and skull has been made familiar."

It is, of course, common knowledge that many of these systems of "character and personality analysis" have enjoyed a notable commercial success. Books have been printed and widely circulated; correspondence courses have sprung up; classes and lectures for instruction have been organized in many cities; and even large business corporations have utilized the techniques advocated for the selection and placement of employees.

Genesis of Modern Personality Reading Systems.—Interest in the nature and mechanisms of the human body was given a profound impetus by the invention of the microscope, Harvey's proof of the circulation of the blood, Descarte's search for the seat of the soul in the brain, and by the rapid development of surgical skill. The discovery of a few elementary facts relating to the localization of functions in the brain led to naïve conclusions that "every trait of character and every mental aptitude, every virtue and vice, ability, interest and capacity, had each its own shelf or pew in the brain area."[3] It was further believed that the presence of these various characteristics was indicated by facial expressions, physiological traits, and notably by protrusions and proportions of the skull bones. Here, then, were the clues to the fittness of men for life callings, indeed, to their destinies.

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[2] K. Dunlap, Fact and Fable in Character Analysis, *Annals of the American Academy of Political and Social Science*, 60: 199, 1923, p. 74.

[3] Reported by H. L. Hollingworth, *Vocational Psychology*, D. Appleton-Century Company, Inc., 1916, p. 23.

This whole movement led to overemphasis on casual observations and a disinclination to follow the slow, painstaking method of genuine psychological research. But the movement was given great impetus by the support of the two great eighteenth century physicians and anatomists, Gall and Spurzheim, both of whom spent much of their time promoting character-reading systems. Francis Galton, in a presidential address before the British Association for the Advancement of Science, later endeavored to inject a more scientific method into the study of physiognomy but according to Roback,[4] "The study of character received little benefit from Galton's gigantic labors."

II. SUBJECTIVE PSEUDO-SCIENTIFIC SYSTEMS

Physiognomy—Personality as Judged by Outward Appearance.—Physiognomy has to do with judging a man's traits and characteristics from outward appearances, especially from facial features. There is a widespread belief that a number of mental and moral traits are betrayed by the "shifting eyes, lofty brow, massive jaw, thin lips, large ear, protruding or receding chin, dimple, wrinkle, tilted nose, thin skin, prominent veins, and shuffling gait, the erect body, the protruding pouch, the curved shoulders, enlarged knuckles, stubby or elongated fingers, the short neck, the long arm, and the manner and rate of stride."[5] In addition to these the selection, care, and mode of wearing clothing are utilized as signs of personality.

This so-called "science" has enjoyed wide publicity and has been accepted by many businessmen of prominence and judgment. What it attempts to do is to place observation on a scientific basis by assuming that some physical traits are concomitants of certain definite mental characteristics, further, that by measuring these physical attributes, we can gauge a person's mental, moral, and emotional traits. As Link[6] says, there is just enough scientific phraseology in the presentations to lead the unsuspecting to believe that they are basically sound. The physiognomists have, for example, claimed that a large head indicates a large brain and consequently a superior mind. Actually, scientists have concluded from over fifty years of investigation that no such relationship exists that is sufficiently reliable to use as a basis for practical prediction.[7]

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[4] A. A. Roback, *The Psychology of Character*, Harcourt, Brace & Company, 1927, p. 144.

[5] Reported by H. L. Hollingworth, *op. cit.*, p. 33.

The extent to which credence is placed in systems of physiognomy has been strikingly presented by Griffitts.[8] At the time of writing, he reported one such system as being used by the superintendent of a large city school system, another as being taught by a United States senator in a certain institute, and a third as being utilized by life insurance salesmen in their handbooks. Furthermore, many employment managers choose their workers according to the contour of their heads, chins, noses, ears, etc. Professional "character analysts" often flourish around large industrial institutions, giving advice to young men regarding marriage, careers, job placement, etc. And businessmen themselves sometimes advise young people going to college to study psychology, believing it to be identical with physiognomy.

It may be that legitimate psychologists are partly to blame for this situation, since they are so busy searching for the basic facts of personality that they have little time or patience for speculative theories. Nevertheless, businessmen and the populace at large ought to be informed of the real situation; they should be told just why the theories under examination are naïve and untenable. And as for university students, they might well cease being disappointed when told that "all scientifically trained psychologists are unanimous in denouncing as fallacious the analysis of character from facial features."[9]

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[6] H. C. Link, *Employment Psychology*, The Macmillan Company, 1919, p. 240.

[7] G. M. Whipple, *Manual of Mental and Physical Tests*, Warwick and York, vol. 1, 1915, pp. 79–91. See also, D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, Chap. 3.

[8] C. H. Griffitts, *Fundamentals of Vocational Psychology*, The Macmillan Company, 1924, pp. 50–52.

[9] H. W. Hepner, *Psychology in Modern Business*, Prentice-Hall, Inc., 1930, p. 151.

Basic Assumptions and Claims of Physiognomy.—The following quotation from a widely circulated book[10] is illustrative of the claims made for contour of face as an indication of personality traits: "The significance of the pure convex type (of face) is energy, both mental and physical. Superabundance of energy makes the extreme convex keen, alert, quick, eager, aggressive, impatient, positive and penetrating. The tendencies indicated by his convex mouth will cause him to speak frankly and at times even sharply and fiercely without much regard for tact or diplomacy. The pure concave, as might be expected, is the exact opposite, so far as the indications of form are concerned, of the pure convex."

Far-reaching and extravagant claims purporting to explain much regarding the inner nature of man in a very simple fashion are reported (but not accepted) by Snow.[11] "Texture is a great classifier of humanity. The individual of fine hair, fine-textured skin, delicate chiseled features, slender, graceful body and limbs, as a general rule, is refined, loves beauty and grace, and likes to work with either purely mental lines or to handle fine, delicate materials and tools. On the other hand, the man with coarse hair, coarse-textured skin, and large, strongly framed features inclines as a general rule to occupations in which strength, vigor, virility, and ability to live and work in the midst of rough and unbeautiful conditions are prime requirements."

In view of the fatuous and unverified nature of these assertions, it is only natural that critical students of personality should be inclined to relegate them to the scrap heap where other passé psychological nostrums now rest. Yet, as the writer has brought out elsewhere,[12] it is probably only fair that we give these claims a reasonable trial by the experimental method—our only check in matters of this kind. The "character analysts" have in some cases refined our commonplace methods of estimating what outward appearances reveal. Some of these observations are based on common sense. For example, we can usually distinguish between the optimist and the pessimist by outward expressions.

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[10] K. Blackford and A. Newcomb, *The Job, the Man, the Boss*, Doubleday, Doran & Company, Inc., 1919, p. 154.

[11] A. J. Snow, *Psychology in Business Relations*, McGraw-Hill Book Company, Inc., 1930, pp. 430–431.

[12] L. P. Thorpe, Are Faces Clues to Character and Personality? *The Sunday Oregonian* (Portland) (Magazine Section), June 30, 1935, pp. 7–8.

However, the founders of the system under discussion have never presented concrete objective data that can be verified by disinterested scholars. This looks somewhat suspicious, and yet it does not disprove the claims advanced. Thus it is up to the psychologist to test these theories by carrying out such well-controlled experiments as are calculated to strike at the truth of the matter. It is only within the last two decades or so that experimental psychology has produced studies of this kind, but some of these bid fair to sift the truth from the error.

Checking the Claims of Physiognomic Doctrines.—It is well known that many employers pride themselves greatly on their ability to judge human nature. One foreman typified the usual assumption when he said, "Let me see a man and I'll tell you if he is any good." Business executives are also heir to this fallacy. The following incidents are illustrative:

Hollingworth[13] carried out an experiment in which twelve sales managers interviewed 57 applicants with a view to giving each a relative rank. A rank of 1 meant that the applicant was regarded as the most suitable and a rank of 57 that he was considered the least suitable of all the men interviewed. Each interviewer was given a private room and was expected to record his judgments. When the resulting rankings were compared it was found that one applicant had the following ranks: 1, 2, 6, 9, 10, 16, 20, 21, 26, 28, 53, 57. Another was ranked 2, 4, 7, 13, 16, 17, 18, 28, 32, 33, 46, and 55. The results for others were much similar although some of the applicants showed more of a tendency to be drawn toward low or high ratings.

Walter Dill Scott[14] conducted a similar experiment in which he asked six salesmanagers to rank 36 applicants for sales positions. His results were similar to those mentioned above. He concluded, "In the case of 28 of the applicants, these six managers disagreed as to whether the individual should be placed in the upper half of the group or in the lower half. An inspection of the table [not shown] shows much disagreement among the six managers, but the disagreements were striking. Thus applicant 17 was thought to be the third best of the group by Manager C, but was placed 13 by Manager B. Applicant 18 was thought to be the best in the group by Manager E, but was ranked as tied for the 32nd place by Manager D. Yet there is reason to believe that these six gentlemen agreed even more closely than is the case with employment agents in general."

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[13] H. L. Hollingworth, *Judging Human Character*, D. Appleton-Century Company, Inc., 1923, pp. 62–66.

[14] W. D. Scott, Scientific Selection of Salesmen, *Advertising & Selling*, October 1915, pp. 5, 6, 94–96.

These investigations indicate that personality traits cannot be appraised correctly on the basis of interviews or general impressions. This is true, no matter how expert the interviewer considers himself or how carefully he works. Modern business is becoming cognizant of this and is turning to the use of objective instruments and statistical data.

Blond and Brunette Coloring as Signs of Temperament.—Rather extraordinary claims have been voiced in some quarters to the effect that blond and brunette coloring are signs of temperament. Indeed, Blackford has said that blonds are, as a rule, changeable, variety loving, optimistic, and speculative, while brunettes are consistent, steady, dependable, serious, and conservative. It is obvious that a relationship such as this, if true, would be of inestimable value to employers and others interested in quick estimates of personality traits. On the other hand, it seems rather ridiculous to consider a universal connection between color of hair and personal temperament as being possible.

Paterson and Ludgate[15] of Minnesota have investigated this question rather thoroughly. In their study 94 psychology students were asked to select from among their acquaintances two pronounced blonds and two equally pronounced brunettes. They were then asked to rate them on traits said to be characteristic of blonds and brunettes. The characteristics utilized were those named in Doctor Blackford's so-called "law of color." Among the 374 subjects studied, details of ratings failed to reveal any constant differences between blonds and brunettes as far as the traits under examination were concerned. In short, blonds and brunettes apparently possess the same general traits. As the authors conclude, "It seems probable that Dr. ———'s law of color with her definite and dogmatic assertion concerning blond and brunette traits is not only misleading, but false."

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[15] D. G. Paterson and K. E. Ludgate, Blond and Brunette Traits: A Quantitative Study, *Journal of Personnel Research*, 1: 122–128, 1922.

Another investigator, Kenagy,[16] asked 38 sales managers to select their four best salesmen for purposes of rating them on such traits as are alleged to be associated with blond and brunette coloring. Of 152 best salesmen 79 were classed as blonds and 82 as brunettes. Little or no difference between the two groups was found as far as the traits rated were concerned. Kitson[17] found much the same situation in his study of color distribution among 400 metalworkers. In spite of the claim that blonds predominate in mechanical bent, "16 per cent of the workers were light, 32 per cent dark, and 52 per cent medium." It seems evident from these disclosures that personality traits and "bents" are not color linked. When we consider the learned nature of personality qualities, as contrasted with the gene-inherited nature of hair coloring, we fail to see how they could be.

Validity of Judgments Based on Photographs.—The belief that a person's character and personality are revealed in his face appears to be widespread. The truthfulness or error of this assertion is a matter of considerable moment since it appears to hold the key to the possibility of forecasting behavior, that is, if we could conceive of personality as being relatively static and as being independent of stimulating conditions in its responses. But the problem seems worth attacking and fortunately a number of investigations have approached it experimentally.

Florence McCabe[18] asked 20 girls of known reliability to rank 40 sorority sisters on 10 different personality traits. The consensus secured was regarded as being as nearly reliable as could be obtained by the method employed. In the meantime, photographs of the 40 girls were taken by the same photographer and under similar conditions. These uniform photographs were then ranked with reference to the 10 personality traits by a group of 20 judges all of whom were entirely unacquainted with the subjects. In the end correlations for each character trait between the first and second 10 *acquainted* judges yielded coefficients ranging from .81 to .93. Correlations between the first and second 10 unacquainted judges (from photographs alone) showed coefficients of from .76 to .91.

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[16] Reported in D. A. Laird, *The Psychology of Selecting Men*, McGraw-Hill Book Company, Inc., 1927, p. 130.

[17] Reported in G. C. Brandenburg, *op. cit.*, p. 582.

[18] F. E. McCabe, *The Relation between Character Traits and Judgments of Character Based on Photographs*, Bachelor of Arts' Thesis, University of Wisconsin, 1926.

These figures are high and no doubt quite gratifying to some, but the real question is—What were the relationships between the judgments based on photographs alone and those indicated by the joint opinions of close acquaintances? These, in short, were all very low except in the case of "beauty" and "intelligence." The reason for the first relationship (.61) is fairly obvious and the coefficient of .70 between photographs and estimated intelligence turned out to be a "false alarm" since it was reduced to .11 when the judgments from photographs were compared with scholastic criteria in the form of school marks. In general, these results are similar to those secured by Cogan[19] in an earlier study in which fewer subjects and less elaborate statistical devices were available.

Subjective appraisal of intelligence has been studied by Anderson[20] who asked 12 graduate students to rank the pictures of 69 department store executives on the basis of estimated intelligence. The average judgments correlated with Army Alpha scores to the extent of .27 and with rating of general value to the firm, .22. While small, these coefficients are positive and may possess some significance.

The interested reader may wonder if judgments of this sort would not be appreciably improved if the raters concerned could actually see their subjects in the flesh. In order to answer this question, Cleeton and Knight[21] conducted an investigation similar to McCabe's except that the unacquainted judges were permitted to view their subjects directly on a stage. Incidentally, it will be remembered that in the previous study the judges had access to the photographs only. Nevertheless, correlation figures between judge's estimates and the actual presence of personality traits were no higher in this investigation than in the McCabe and Cogan researches. Evidently there is no special advantage in actually seeing the subjects. Furthermore, judging from these reports, it appears that claims of successful face readings are more or less spurious, being without foundation in actual fact.

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[19] L. Cogan, reported in H. L. Hollingworth, *Vocational Psychology*, D. Appleton-Century Company, Inc., 1916, pp. 48–53.

[20] L. A. Anderson, Estimating Intelligence by Means of Printed Photographs, *Journal of Applied Psychology*, 5: 152–155, 1921.

[21] G. U. Cleeton and F. B. Knight, Validity of Character Judgments Based on External Criteria, *Journal of Applied Psychology*, 8: 215–229, 1924.

Phrenology—Personality as Indicated by Skull Formation.—While none of the pseudo-systems under discussion in this section are any longer regarded by scientists as valid approaches to personality evaluation, we were probably warranted in according as much space as we did to physiognomy since it involves so many practical questions which present themselves for solution in the course of daily experience. Some of us are tempted to regard the fallacious a priori assumptions of this so-called "science" as having been duly and satisfactorily disposed of, but we must remember that the average individual, being unschooled in scientific psychology, is often still very much under the impression that physiological character- and personality-reading systems are synonymous with orthodox psychological doctrines.

Little do they realize how far removed these pseudo systems are from recognizing the important implications of the principle of causation, of the stimulus-response relation, of the specificity doctrine, and of the concept of fundamental needs. So perhaps it is well that we give some space to an emphasis on the true status of these popular personality cults. The populace is slow to absorb the more scientific findings in these matters, but once they have done so, they will be immeasurably better prepared to adjust themselves to the practical problems which constant social intercourse thrusts upon them.

Coming to the cult called "phrenology" we find ourselves in a personality-rating field which has even less to commend it than does the one just discussed. Yet there are a few considerations touching on its claims which should perhaps command our attention in a volume devoted to a psychological analysis of personality theories, scientific or otherwise.

Since phrenology is manifestly a branch of physiognomy its historical development parallels that of the latter. Phrenology originally grew out of the erroneous notion that the brain is divided into various areas each of which controls one function or one personality trait, a trait which, incidentally, would, in the nature of such a case, be a static, unified category of action. With the discoveries by eighteenth century surgeons that the removal of certain parts of the brain resulted in modified muscular reactions, bizarre conclusions were reached with reference to the organization of brain functions. Doctor Gall,[22] a German physician and the founder of the system, concluded that each trait of personality, such as vice, generosity, love of mate, honesty, mathematical ability, etc., had its own pigeonhole in the brain surface.

Gall came to his conclusions as the result of studying the skulls of many men who were known to possess certain characteristics and evidently read a causal connection into the relationships. This is the *post hoc ergo propter hoc* type of reasoning which is now known to be so highly fallacious. Nevertheless, together with Spurzheim, he traveled about Europe giving lectures and demonstrating his technique of prediction through examination of "faculties" and their relation to cerebral anatomy. The doctrine of phrenology subsequently became very popular, especially among physicians.

The Far-reaching Claims of Phrenology.—The fundamental assumptions of phrenology have been succintly summarized by Hollingworth[23] as follows:

1. That such cerebral localization as exists concerns fundamental and specific traits of character (personality) or types of abilities such as secretiveness, circumspection, love of babies, generosity, veneration, constructiveness, etc.
2. That the more developed any one of these given traits is, the larger will be the supposed area of the brain which contains its supposed organ.
3. That, since the skull fits fairly closely to the brain surface, the relative development of a given portion of the brain will be indicated by the relative prominence or size of the different parts of the cranium, so that the degree of possession of the trait may be judged from an examination of the exterior of the skull.
4. That the occasional casual observation of coincidence between particularly marked mental qualities and particular characteristics is a sufficient basis for inferring universal and necessary connections between these two features.

By virtue of these astounding postulations phrenology claims the ability to reveal character, to chart personality, to help in the choice of an occupation, to aid in matters relating to diet, and even to indicate the "type" of person one should marry. All this information, if reliable, would be very fine, but figuratively speaking, it fairly takes our breath away when we consider how many vital psychological factors and significant behavior mechanisms are left out of account in such an oversimplified system. It is any wonder that such pronouncements have met with vigorous denials from recognized psychologists?

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[22] For a short résumé of the work of Gall, see G. Murphy, *An Historical Introduction to Modern Psychology*, Harcourt, Brace & Company, 1930, pp. 54–56.

[23] H. L. Hollingworth, *op. cit.*, p. 26.

Theoretical Objections to Phrenological Doctrines.—It is interesting to note the fallacies in each of the four assumptions outlined above. In general, all that is known concerning brain localization seems to indicate that there are sensory and motor areas which function in connection with certain sense organs and muscle systems. Although it is true that nerve fibers connect each part of the body with the brain in such a way that it can be said that certain sensory terminals are localized in the cortex, such an interpretation of localization is a far cry from the assumption held by phrenologists that personality traits as unified entities are localized therein. Obviously such reactions as those customarily labeled "love," "hate," "jealousy," "generosity," and the like, are not responses of single "faculties," or single organs for that matter, acting on atomistic muscle patterns, they are, rather, specific and integrated responses elicited by stimuli configurations and enacted by the whole perfectly synchronized organism. And as Lashley[24] and others have so adequately shown, even damaged brains can and do carry on complex functions which, according to strict brain-localization doctrines, would be theoretically impossible.

There is no experimental evidence indicating that the strength of an organ is reflected in the size or shape of a corresponding part of the brain. If this were so, individuals who are deaf and dumb would be expected to possess unusually small auditory and speech brain areas. There is no evidence bearing out such a proposition. Furthermore, it has been shown numerous times that contour of different parts of the cranium is no index to the size of any given part of the brain itself. In operations on animals, it has been demonstrated that the shape and thickness of different parts of the bony structures gives little indication as to the depressions or protuberances of the brain proper. It is also known, of course, that between the skull and brain a tough tissue or membrane has its abode.

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[24] K. S. Lashley, *Brain Mechanisms and Intelligence*, University of Chicago Press, 1929.

The assumption, then, that there is a link between anatomical and mental characteristics is certainly without foundation in fact. As Dunlap[25] says, "Certain external structural details may be linked with certain mental characteristics, but we know of none such at present. The notion that the size of the head, or its shape, or even the size or conformation of the brain have definite relation to mentality, except in distinctly pathological cases, have long been exploded." Dunlap goes on to say that if we ever expect to learn the correspondence that may possibly obtain between mental and anatomical traits, experimental investigations will have to be carried out with the same rigor that marked the development of mental tests.

Factual Evidence Discrediting Claims.—Turning now to experimental investigations touching on phrenological doctrines we find one in which the claim of Blackford that definite personality traits are associated with convex and concave profiles, is quite conclusively tested.

Evans[26] asked a group of 25 sorority girls to rate each other on seven personality characteristics and subsequently pooled the rankings so as to get a simple composite judgment with reference to the amount of the trait exhibited by each individual. With this method, high correlations were secured between the judgments of the first 12 and the last 13 subject-judges. After the contour of the various faces had been carefully measured by a special instrument devised by Hull (then at the University of Wisconsin) for that purpose, correlations were computed between the facial measurements and personality-trait ratings. Contrary to the assertions of subjective personality analysts, the correlations were nearly all very small. While the meager number of cases utilized in this investigation tends to vitiate the findings, the results secured are indicative of the spuriousness of the subjective analyst's claims.

In a similar investigation, conducted in the Wisconsin laboratory, Sherman[27] used a specially devised radiometer to measure the skull and facial dimensions of 78 engineering freshmen. In correlating these with school marks, Sherman secured a series of positive but very small coefficients. In commenting on these results, Hull[28] brings out several rather significant details. First, he points to a negative relation between scholarship and height of forehead, a finding which is contrary to popular belief. Next he singles out a correlation of .50 between a combination of head measurements and academic marks. In the third place, he points out that there is a positive relationship between certain dimensions of brain case and scholastic aptitude.

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[25] K. Dunlap, *op. cit.*, p. 76.

[26] A. L. Evans, *The Alleged Relation between the Face and Character*, Bachelor of Arts' Thesis, University of Wisconsin, 1921.

[27] E. B. Sherman, *An Experimental Investigation Concerning Possible*

The last finding has been substantiated by other investigators, notably Sommerville,[29] who discovered a coefficient of .09 between head length and academic success and of .138 between head height and composite school marks. In summarizing these findings, Hull declares his belief that head dimensions, when combined with other behavior criteria, may contribute "substantial increments to the prognosis of aptitudes." But aside from these meager data, which we are certainly glad to accept as far as they go, it seems clear that phrenological tenets have little to offer as clues to bona fide personality qualities. Furthermore, the doctrines advanced, if taken seriously, are conducive to error as well as to a great deal of positive harm.

Graphology—Judging Character and Personality from Handwriting.—Handwriting analysis has become a favorite study with many and has resulted in the development of a character and personality reading system called "graphology." Of all the personality analysis cults designed to yield quick and practical estimates of a given individual's mental abilities, capacities, and intimate personal qualities, graphology has been one of the most glamorous. But while it has enjoyed wide popularity with the public, only comparatively recently has it attracted the attention of scientific psychologists who are sufficiently interested to make genuine experimental investigations of the claims made. However, now that an appreciable amount of reliable evidence bearing on the question is available we may safely attempt an objective

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Correlations between Certain Head Measurements and University Grades, Bachelor of Arts' Thesis, University of Wisconsin, 1923.

[28] C. L. Hull, *Aptitude Testing,* World Book Company, 1928, pp. 131–138.

[29] R. C. Sommerville, Physical, Motor, and Sensory Traits, *Archives of Psychology,* 12: 1–108, 1924.

appraisal of the whole matter of personality reading through handwriting methods.

Graphology is a widely advertised method of personality reading and claims to be the "science" of handwriting analysis. It is founded on the assumption that traits, qualities, and characteristics are revealed unerringly in an individual's handwriting. Since it is based on the logical conclusion that handwriting movements are in the nature of the case determined by factors bound up in the personality of the individual, this belief has a strong appeal to many. It is known, for example, that some bank cashiers can distinguish a person's handwriting no matter how carefully he may attempt to conceal its usual form. But the real problem touches on the degree to which uniform relationships, if any, may exist between handwriting and personality traits.

Fatuous Claims of So-called "Handwriting Experts."—As the author[30] has previously said, "Graphologists have been able to impress the layman because most of their guesses are apt to be true. That is to say, most of us possess the same traits, but differ in the extent of which we have them, and thus the handwriting "experts" deductions are likely to fit the majority of people to a moderate degree by chance." Not only do graphologists claim that character, personality, ability, and temperament are fully revealed in handwriting, they make bold to say that their system has been developed by careful analysis and measurements of thousands of specimens of the handwriting of individuals whose personality qualities are well known. The unsuspecting public little realizes that in reality these "analyses" are frequently based on mere analogies and arbitrarily pre-prepared statements.

Unverified claims of an attractive nature are often made. From the writing of graphologists, Hepner[31] quotes the following alleged relationships:

1. Two or more shapes of the letters indicates moodiness.
2. If the writing is shaded for effect, it indicates affection.
3. If the endings of words ascend very high, the writer "lives in the clouds."

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[30] L. P. Thorpe, Analyzing the Claims of Graphology, *Sunday Union-Bulletin* (Walla Walla), Jan. 5, 1935, pp. 13, 22.

[31] H. W. Hepner, *op. cit.*, pp. 167–168.

4. Square writing indicates mechanical ability.
5. If the cross of the *t* slopes upward, ambition is evident, if downward, pessimism and gloom.
6. Large letters indicate a spendthrift nature with optimism dominant.
7. Small letters indicate secretiveness.
8. If the first strokes of N, M, U, and W are very high, the writer possesses pride.
9. If the lines run below the basic lines the writer is easily discouraged and becomes despondent.
10. If the lines have an upward slope at the beginning and a downward slope at the end, such a person promises much but does not keep his promises or his appointments.

Such novel offers as the following are not uncommon in magazines featuring popular systems of personality reading:

"Have your character and personality analyzed. Know your weak points. Utilize your strong qualities. Develop latent abilities. Know the character of your friends and acquaintances. Make the most out of your life and opportunities.

"The personal service is graded in amount and costs as follows:

"1. Character cameos—100 words. Accurate sketches in miniature, 50 cents.

"2. Personal typewritten analysis—a more intimate characterization, 200 words, helpful and true, $1.

"3. Descriptive (lesson) personal typewritten analysis—in greater detail with many signs pointed out and interpreted, 400 to 500 words or longer, as ordered, $2 to $5.

"4. Thorough personal diagnosis with vocational résumé—800 to 1,000 words. Send stamped envelop for particulars, $5.

"5. Extended descriptive personal diagnosis with vocational suggestions, 1,500 to 2,000 words, made from several scripts written over a period of years, $10."

Such are the "generous" offers of graphology, "a recognized science for hundreds of years" (?). However, this cult has been in existence long enough to establish its claims if they can be shown to be valid. This it has failed to do in any substantial way in spite of the claims of exceedingly clever advertising material. It must be admitted, though, that while no definite correspondences between handwriting and personal qualities have been made out as yet, no one has shown that they do not exist. Hence a number of experimenters, realizing the possibility of such relationship, have been led to search for scientific evidence bearing on the truthfulness of the claims made.

What was perhaps the first attempt along this line was made by the great French psychologist, Alfred Binet[32] while searching for valid tests for the measurement of higher mental processes. In one study, he asked a number of graphologists to sort out according to sex the writers of 180 envelopes addressed to him in about equal numbers by men and women. In a situation like this chance would, of course, yield about 50 per cent correct decisions, yet all the graphologists ran much ahead of this figure, one achieving as high as 79 per cent of correct judgments.

In another investigation, Binet studied handwriting samples secured from 37 eminent individuals. With these he paired the writing of persons of equal education and social status but of much lower intelligence. When asked for their appraisals, several graphologists selected the writings of the more intelligent individuals to an extent that chance alone would hardly yield. Binet was inclined to give a certain amount of credit to the claims of handwriting readers. But it must be remembered that these readers were not called upon to give an intricate analysis of their unseen subjects' personality qualities, they were merely required to recognize the differences in the visible characteristics of their writing.

Objective Evidence from Modern Investigations.—A more modern and objective attempt to test the claims of graphology is found in a statistical study by Hull and Montgomery.[33] They

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[32] A. Binet, *Les Révélations de l'écriture d'après un controle scientifique*, Paris, 1906.

[33] C. L. Hull and R. B. Montgomery, An Experimental Investigation of Certain Alleged Relations between Character and Handwriting, *Psychological Review*, 26: 63–75, 1919.

Speaking from the point of view of Gestalt configurational principles, Hartman reasons that the atomistic approach of Hull and his associates does violence to the true nature of personality appraisal. To quote him: "Again, in graphology it is a mistake to make micrometric surveys of letter height, slant, and the like, for this is the old evil of unreal elements. It is only in the light of the Gestalt approach that we are able to understand the oft-noticed fact that character estimates made by judges are usually more correct than the detailed systems upon which these judgments presumably are based. The estimates have been given in terms of total impressions of unique wholes, whereas the measures have all been fragmentary. Even where ratios have been employed, such as eye-width divided by facial length, the inner dynamics of the situation has been overlooked." Hartmann goes on to substantiate his point by reference to the outstanding work of the German psychologist, Arnheim, as reported in "Experimentellselected six personality traits concerning which there was agreement among graphologists as to association with handwriting traits susceptible of objective measurement. Seventeen university students ranked one another on the traits in question and subsequently copied a certain piece of prose, using the same kind of paper, writing at the same desk and with the same pen. The writing samples secured were then measured with the greatest care and in accordance with graphological principles. Following this step statistical relationships were computed between the personality rankings and the measurements. Unfortunately for graphologists the relationships were all very small, some being positive and others negative.

This experiment was repeated with some minor variations by Brown,[34] a pupil of Prof. Hull. She asked 30 sorority women to rank each other on five given traits. Instead of using set writing material she used writing found in the subjects' letters. Handwriting traits that could not be measured objectively (neatness and individuality) were ranked by ten independent judges. In general, the results secured were similar to those found by Hull and Montgomery. The relationships for neatness and individuality turned out to be small, but nevertheless positive. They may possibly represent genuine tendencies.

Probably the most elaborate studies in this field are those by June Downey,[35] who found significant relationships between features of handwriting and general mental and motor attitudes. She devised the 12 will-temperament tests bearing her name, most of which utilize handwriting. The series included speeded, retarded, disguised, blocked, and automatic handwriting, slow and rapid imitation of script, and speeded writing in a restricted space. Downey believed that these tests have "considerable characterological significance" and that they get at general temperamental patterns.

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psychologische Untersuchungen zum Ausdrucks—problem," *Psychologie Fortschricte*, 11: 1–132, 1928 (G. W. Hartmann, *Gestalt Psychology*, Ronald Press Company, 1935, pp. 253–255).

[34] L. E. Brown, *An Experimental Investigation of the Alleged Relations between Certain Character Traits and Handwriting*, Bachelor of Arts' Thesis, University of Wisconsin, 1926.

[35] J. E. Downey, *The Will-Temperament and Its Testing*, World Book Company, 1923.

We can see from these data that while handwriting analysis might well qualify as a novel parlor game, or other form of amusement, it can hardly be taken seriously as a system of personality reading. Its proponents have evidently never caught the slightest gleam of the rigors and checks of the scientific method with its relentless search for genuine causal connections and its insistence on objective verification. If they had they would find it very difficult to see significant relationships between such diverse factors as the neuromuscular function of writing and the possession of those complicated organized systems of response which we call personality traits.

Chirognomy—Discovery of Personality through Contour of Hands.—Certain anatomical signs relating to the shape and proportions of the hand are alleged to prognosticate personality traits. Thus chirognomy professes to discover a person's personality and character through a scrutiny of the contour of his hands. It differs from *chiromancy*, or palm reading, which claims to read both the past and the future in the lines of the palm. Hull[36] tells of one chirognomist who claims to have given private lessons to 275 business establishments in New York, 135 in Boston, and 342 in Chicago. All these customers were said to be employers of labor who sought help in psychological matters which were beyond their own judgment.

An experimental investigation of the claims of chirognomy has been carried out by MacLaurin.[37] She secured personality ratings from 30 sorority sisters and then proceeded to make careful measurements of the subjects' hands according to chirognomist principles. It had been claimed, for example, that the longer the first finger as compared to the second the more ambitious a person is, and that the farther an individual can bend his fingers backward, the keener is his mind. However, in this study correlation coefficients for relationships between these mental and physical factors were all very small, so small, in fact, as practically to remove chirognomy from the field of personality prognosis. To quote MacLaurin, "Here again the correlations are suggestive, but the probable errors are so large as to prevent us from concluding that anything but a chance relationship exists."

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[36] C. L. Hull, *op. cit.*, p. 145.

[37] D. D. MacLaurin, *An Experimental Investigation of Certain Alleged Relations between Physical Characteristics of the Hand and Mental Traits*, Bachelor of Arts' Thesis, University of Wisconsin, 1921.

Astrology—Alleged Influence of Heavenly Bodies on Human Personality.—Here we have what is probably one of the oldest subjective systems of characterology. It is the pseudo science which claims a definite influence of sun, moon, and stars on human life. Given the year, day, and hour of birth, the astrologer claims to be able to read an individual's character, personality, and ability. The scientist replies that while it is no doubt true that heavenly bodies exert a profound influence on human beings, it seems nothing short of naïve to ascribe to them specific influences which provide a sound basis for the prediction of events or for prognosticating personality development.

Astrologers have had an opportunity ever since the days of the Egyptian ascendency to establish the reliability of their postulations and yet to date no such unequivocal evidence is at hand. This is not surprising, of course, when we consider that these cultists do not pretend even to substantiate their claims by way of the objective method. They are steeped in the logic-tight morass of guesswork and seem content to continue on such a basis. Their statements are subsequently couched in general subjective terms and are, as we might expect, largely favorable. Obviously, they do not coincide with actual facts sufficiently well to warrant an acceptance of the method.

A most interesting investigation designed "to determine how well astrologers are able to agree in their predictions and analyses" has been reported by Parr.[38] After securing the names and advertising material of a group of astrologers geographically distributed from India to California and from Maine to Texas, Parr and an assistant sent for a "scientifically prepared Horoscope" from 16 such individuals. A comparison of these general documents disclosed a similarity among them that suggested, in part at least, form letters. But the real test came when six more detailed—and more expensive—horoscopes bringing with them the answers to specific questions were compared. Unlike the average individual who asks questions the answers to which are quite uncertain, these investigators submitted to the astrologers questions the answers to which were *already known.* As might be anticipated, not one of the astrologers' answers came close to being correct and practically all were phrased in such a general way as to tempt the client to read into them what he would like to see. The author concludes with this moral: "If you simply must have a horoscope, make it yourself. It will serve just as well as one which costs money."

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[38] F. W. Parr, Modern Science Discredits Claims of "Mystic" Astrologers, *Sunday Oregonian* (Portland) (Magazine Section), Feb. 24, 1935, p. 1.

Other Questionable Systems of Personality Analysis.—With Hepner[39] we should like to dispose of other miscellaneous character and personality reading cults in the following fashion: "Concerning palmistry, astrology, Hindu philosophies, numerology, vibrations, spiritualism, and others of their like, we must allow the psychoneurotic and the uninformed to dabble in them. These cults seem to satisfy the inner cravings of the weak and maladjusted, who wander from one cult to the next only to find that they attain what they want for a short time and then must try some other 'system'. These cults and 'philosophies' are a means of evasion of the difficulties of life. They offer a prompt and immediate answer to the poorly adjusted neurotic. . . . All these last named schemes for analysing people or guiding them are considered unsound by the students of modern science."

Why People Think They Can Read Character and Personality. In view of the fact that it is very difficult to find support for the various character and personality analysis systems, either in critical studies or in the opinions of scientific men, we are constrained to wonder why they continue to exist after so many years of exposure. We are especially interested in knowing why the particular systems under examination, rather than some others, have proved to be so attractive. As all psychologists probably know, the explanation is found in certain unique aspects of our mental processes. These we shall scrutinize briefly. The résumé presented here is adapted from that of Brandenburg.[40]

1. *The Irresistible Tendency to Reason by Analogy.*—One of the most treacherous methods of explaining a new situation is that of casting about for familiar situations that resemble the new one to some degree. The assumption is, of course, that the old explains the new. The danger lies in the fact that inferences

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[39] H. W. Hepner, *op. cit.*, p. 168.

[40] G. C. Brandenburg, Why Some Think They Can Read Character, *Industrial Psychology,* 1: 641–646, 1926.

leading to complete explanations are likely to be assumed when the similarity between the two situations is entirely too slight to justify such inference. It is not uncommon for an analogy to turn out to be quite absurd when subjected to critical examination. For example, the fact that lions are courageous while at the same time possessing tough skin has led some erroneously to infer that humans with coarse skin are necessarily brave.

2. *The Tendency to Regard Physical Symptoms as Indicative of Mental States.*—Casual observation shows us that certain mental states and activities are accompanied by specific physical mannerisms. A shrewd salesman capitalizes on his ability to interpret the attitude of his customer by noting such physical expressions. Physical "signs" and overt acts are often so interwoven that it is well-nigh impossible to say to what extent one's judgment is influenced by one or the other. However, it is probably true that the most reliable judgments are based on observed actions rather than on aspects of physical appearance.

It would be gratifying, indeed, if psychology could analyze out physical signs that are indicative of intellectual and emotional characteristics in such a way as to reduce the relationship to a science. But this has not been done to date, and any attempt at personality prognosis by physical signs is thus certainly unfounded.

3. *Misinterpretations of Pioneer Scientific Studies.*—Another way in which physiognomic method has been made to appear valid is through continual misinterpretation of the early scientific studies of such men as Havelock Ellis, Montegazza, and Lombroso. These men were especially interested in determining physical and mental differences among groups of individuals rather than in studying individual differences within a group. Lombroso's studies of the so-called "criminal" types did seem to show that certain physical signs are more common to some kinds of criminals than to others. But his conclusion that these physical characteristics are indicative of given criminal tendencies has been refuted by later and more meticulous researches, so that at present legitimate psychologists do not attempt to identify criminals by means of irrelevant external physical criteria.

4. *The Tendency to See What We Wish to See.*—An old proverb tells us, "There are none so blind as those who will not see." This weakness seems to be due to a tendency of humans to

respond to a situation calling for perception and judgment by singling out those factors in the situation which have, through past experience, secured a more satisfying standing than the others. Thus we see consistency in our own behavior and incongruity in that of our more "prosaic" neighbor. It is easy to understand, therefore, that the physiognomist who expects (or wishes) to see certain traits in an individual is very likely to find what he wants. His assumption is fairly safe since most of us possess something of nearly every common trait.

5. *The Inhibiting Influence of Belief and Desire.*—Some investigators have appeared to show that one's beliefs are greatly influenced by his desires and that when evidence in support of a theory is in conflict with previously established inclinations toward the belief in question, such evidence is either discarded or greatly reduced in value. Thus, as someone has suggested, the Republican sees only those things which convince him that Republicans alone can successfully run the country and that Democrats are either incapable or corrupt. He gets into arguments with his "prejudiced" Democratic friends and turns to orthodox Republican periodicals to find support. He deludes himself into believing that he is an unprejudiced seeker after truth and would be offended if his impartiality should be questioned.

In addition to the reasons just chronicled, it might be mentioned that popular personality reading cults persist because of widespread ignorance concerning the nature of psychological processes, particularly with reference to the intricate organization of personality traits, because of the tendency to hold tenaciously to old comfortable ideas that have been sanctified by tradition, and because of the relative indifference of many of our newspaper and magazine editors, whose willingness to advertise questionable doctrines does more than anything else to keep the general public in a favorable attitude toward these unverified character and personality rating systems.

Conclusions.—In conclusion, then, of our survey of studies bearing on the question, it seems clear that none of them have been very productive of evidence favorable to the subjective personality-analysis idea. We are inclined, therefore, to believe that these cults are largely devoid of scientific bases. They are constructed on unsound foundations, indulging in loose analogies and impractical logic. We have thus no science of personality reading. If such a system is ever developed, it is doubtful whether it will be based on anatomical appraisals.

In the meantime, it would seem best that businessmen who must proceed in the selection of men on personal judgment do so without committing themselves to any "system." They will do better to make use, whenever possible, of the objective techniques and tests which psychologists are developing by way of direct measurement of capacities and personality qualities, without reference to physical "signs."

III. PERSONALITY SYSTEMS BASED ON PHYSICAL CONSTITUTION

The breakdown of physiognomy and other systems of characterology based on anatomical signs has not in the least deterred those who still feel that through the maze of claims and exposures thereof there exist some discoverable relationships between physical constitution and such factors as intelligence, temperament, character, and psychotic make-up. These individuals realize that former evaluations have often been based upon a few extreme cases, frequently of a pathological sort, and that there has been a decided tendency to minimize the importance of securing tangible evidence based on reliable samplings.

But the feeling that bodily characteristics and personality qualities are related will not be downed. So a number of workers, apparently qualified along scientific and research-technique lines, have pushed the problem on to a stage of development undreamed of by their more naïve predecessors. In some cases, they have uncovered relationships which bid fair to advance the cause of objective personality analysis, but unfortunately, in certain instances, the enthusiasm of the investigator for his thesis has led him to formulate sweeping generalizations hardly warranted by the supporting data available. A scrutiny of these more scientific physiological studies may possibly throw additional light on the elusive question of the bodily basis of personality qualities.

The Morphologic Index in Relation to Intelligence.—Most intriguing and for a time most promising was the morphological approach of the late Dr. Naccarati. Being inspired by a study of the anthropological researches of his countryman, Viola (and others), he proceeded first of all to work out a quantitative technique for associating body build with degree of intelligence possessed. Reasoning that intelligence was far too complicated a factor to be associated even as a correlate with a single or perhaps a few physical traits, Naccarati set out to develop a physical index "made up of many elementary traits" which might be indicative of mental organization. This composite of a number of select physical measurements constitutes his famous "morphologic index."[41] In its simpler form the index is stated as follows:

$$\text{Morphologic index (M.I.)} = \frac{\text{length of two limbs}}{\text{volume of trunk}}$$

However, both a more elaborate computation[42] and a simpler height-weight ratio have been used by Naccarati and his critics in their various researches.

With this method of classification, which it was hoped might disclose the possible dependence of intelligence on body morphology, worked out, Naccarati proceeded to identify two outstanding body types—microsplanchnics and macrosplanchnics. According to him, "*Microsplanchnics* are individuals possessing a small trunk so that the development of the limbs is in excess over it, that is the vertical diameters predominate over the horizontal of the body as a whole and in its constituents, trunk, extremities, and portions of the extremities." *Macrosplanchnics,* on the other hand are "individuals possessing a large trunk which is excessively developed in comparison with the limbs, that is, the horizontal diameters are prominent in comparison with the vertical diameters in the body as a whole and in its constituents, trunk, extremities, and portions of the extremities."[43]

It was recognized, of course, that between these two opposite forms there was a composite type in which trunk and limbs show a harmonious and proportional development. This intermediate type, or *normosplanchnic,* which statisticians would immediately recognize as a central tendency in a normal distribution of body forms, did not interest Naccarati particularly (as is usually the case with *type* psychologists) since he was primarily interested in associating intellectual differences with contrasting body builds.

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[41] S. Naccarati, Morphologic Aspects of Intelligence, *Archives of Psychology,* no. 45, 1921, pp. 1–44.

[42] W. H. Sheldon, Morphologic Types and Mental Ability, *Journal of Personnel Research,* 5: 447–451, 1927.

[43] S. Naccarati, *op. cit.*

On the basis of noticing that bright children tend to be rather long and thin with small trunks and well developed limbs and that duller children are often, conversely, stout with large trunks and relatively less developed limbs, this investigator formulated his fundamental postulate that *microsplanchny* is indicative of brightness while *macrosplanchny* is associated with dullness. Thus his morphologic index was supposed to provide the key to the relative intelligence of a given individual. Naccarati was willing to make this assumption on the basis of a belief that the typical microsplanchnic represents a superior development of the nervous system and its attributes, while macrosplanchny is indicative of the ascendency, in development, of the vegetative or nutritional system. Thus, body morphology is presumably responsible for the development of intelligence.

In drawing up a series of correlations[44] between morphologic index and various measures of intelligence in the case of groups of men and women at Columbia University, coefficients ranging in magnitude from .11 ± .09 to .44 ± .08 were secured. The average of the 13 coefficients, .256, is not to be ignored since it represents a higher figure than has usually been reported for correlations between *single* physical factors and intelligence. But Naccarati's figures cannot be taken too seriously since his correlations fluctuate so noticeably from study to study and in view of the fact that in less than half of the investigations were the samplings sufficiently large to yield P.E.'s indicative of statistical reliability.

Body Types vs. Personality Differences.—Naccarati did not stop with investigations touching on differences in intelligence, he pushed his quest on to a search for a possible connection between morphologic types and personality traits of the emotional variety.[45] In collaboration with a colleague (Garrett), he applied his morphologic-index technique (often simply the height-weight ratio) to the study of individuals classified as psychoneurotics. In an investigation involving 100 Italian males of varying ages and diagnosed as different forms of psychoneurosis, he came to some interesting conclusions which have, incidently, aroused considerable comment, mostly unfavorable.

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[44] S. Naccarati and H. E. Garrett, The Influence of Constitutional Factors on Behavior, *Journal of Experimental Psychology*, 6: 445–465, 1923; S. Naccarati, The Morphologic Basis of the Psychoneuroses, *American Journal of Psychiatry*, 3: 527–545, 1924.

[45] S. Naccarati and H. E. Garrett, The Relation of Morphology to Temperament, *Journal of Abnormal and Social Psychology*, 19: 254–263, 1924–1925.

In brief, it was found that (1) there were more microsplanchnics and macrosplanchnics among the psychoneurotics than in a similar number of normal individuals of like age; (2) that microsplanchnics tend to be neurasthenic; and (3) that microsplanchnics are more likely to be found among the emotional psychoneurotics. This means that slim individuals of the asthenic (using Kretschmer's designation) build are more readily given to chronic fatigue or "nervous" exhaustion, while the plump, pyknic type is prone to emotional disturbances of the psychoneurotic variety, *i.e.*, hysteria, anxiety neurosis, and the like. As for normosplanchnics, they are said to possess marked resistance to both external and internal pathogenic influences, with the result that they tend to maintain a fine functional balance characterized by freedom from personality maladjustments.

In commenting on these findings, Paterson[46] points out the error of assuming that there is a reduced percentage of normosplanchnics among psychoneurotic individuals. Using Naccarati's own data, he shows that instead of indicating a bimodal curve, characterized chiefly by the two contrasted types, the morphological indices of the 100 Italians between ages 25 and 40 really resulted in the formulation of a fairly normal, *unimodal* distribution. While it is true that the thin, asthenic types showed a much higher average morphologic index (460) than did the heavier emotional types (375), taken all together, the 100 psychoneurotics yielded practically a normal curve.

This means, of course, that the type idea is highly questionable. Men like Naccarati, Kretschmer, Spranger, and Jung like to point out the characteristics of so-called "types" which they have abstracted from total groups, but in reality there is but one type and that is the predominant composite or average which always hovers about the central hump of a nonrepresentative curve. The alleged types turn out to be the relatively extreme and contrasted cases found on either end of the distribution. This situation spells the weakness of the type idea; most individuals are left out of account because they are not sufficiently extreme to fall into contrasted classifications.

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[46] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, pp. 221–222.

In this connection, Paterson[47] also asks the significant question whether the psychiatrists responsible for the diagnosis of Naccarati's neurotic types were themselves ignorant of or free from belief in morphologic assumptions. As he says, "In work of this sort, when uncertainty in diagnostic classification frequently exists, it is essential that every possible precaution be taken to prevent theoretical presuppositions from producing biased data to be later used in verifying the theory itself."

Objective Attempts to Verify Naccarati's Theories.—As might be anticipated, many attempts have been made to check or verify the Naccarati doctrines. It is a matter of some moment whether intellect, neurotic temperament, and other personality traits are contingent upon certain body styles. If so, we have at hand a valuable clue to the classification and personnel management of men and women. But before coming to weighty conclusions in these matters, it behooves us to scrutinize the best evidence available touching on the reliability of the original disclosures and assumptions.

In connection with the Bureau of Educational Experiments in New York City, Johnson[48] studied the relation between weight-height ratios and Stanford-Binet mental-age scores in the case of 191 children of preschool and elementary-grade age. When the chronological age factor was held constant, as it should be with data of this kind (partial correlation technique) he secured an average coefficient of .04 ± .05. This is, of course, practically no relation at all.

Heidbreder[49] has reported a careful study in which she took pains to control the factors of sex, reliability of intelligence tests used, accuracy with which physical measurements were taken, and the morphological distribution of subjects. Correlating height-weight ratios with Minnesota College Ability Tests, she obtained a coefficient of .03 ± .03 for 500 freshman men and .04 ± .03 for the same number of freshman women. Here again, we have practically negligible (but positive) scores for intelligence vs. physique.

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[47] *Ibid.*

[48] B. J. Johnson, *Mental Growth of Children in Relation to the Rate of Growth in Bodily Development*, E. P. Dutton & Co., Inc., 1925, pp. 1–160.

[49] E. Heidbreder, Intelligence and the Height-weight Ratio, *Journal of Applied Psychology*, 10: 52–62, 1926.

One of the most thorough investigations designed to check on the contentions of Naccarati is that by Sheldon.[50] Working at the University of Chicago, this psychologist duplicated Naccarati's most elaborate procedures and suggestions in a study of 434 white freshmen ranging from seventeen to twenty-two years of age. In place of contenting himself with the usual height-weight ratio, Sheldon made 12 careful anatomical measurements on each student and correlated the resulting morphologic indices with American Council Psychological Examination scores. His technique yielded an average coefficient of .14 ± .03. This figure is smaller than Nacarrati's own results, but being reliable (more than four times its probable error), it must be recognized as substantial.

Sheldon[51] has also studied the relationship between morphologic index and various personality traits. He did this by first securing composite ratings (by upperclassmen fraternity brothers) on sociability, perseverance, leadership, aggressiveness, and emotional excitability in the case of 155 freshman men, and subsequently correlating the scores obtained with morphologic indices secured by following Naccarati's most intricate directions meticulously. The coefficients emerging from the various relationships ranged all the way from −.22 for morphologic index vs. sociability to +.24 for transverse epigastric diameter vs. aggressiveness. In view of such small coefficients, most of which are statistically unreliable, we can hardly say that we have found any significant relationship between physique and personality qualities. Naccarati's postulate of emotional instability as an attribute of individuals with low morphologic indices (macrosplanchnics) is evidently open to serious question.

Another thorough test of Naccarati's theories was the one carried out by his own former colleague, H. E. Garrett[52] (in collaboration with Kellogg). In this research, measurements entering into the morphologic indices were taken from photographs secured under uniform conditions and from various angles by gymnasium authorities. The authors justify this procedure by statistical measures designed to indicate its superiority over other techniques. When correlated with the Thorndike Psychological Examination for High School Seniors and College Freshmen, this "picture morphological index" yielded an average r of .07 ± .05. The coefficient for actual height-weight ratio and Thorndike examination scores turned out to be .10 ± .05. Again, very low but positive figures fail to substantiate Naccarati's belief in an intimate relation between *composite* physical measurements and test intelligence.

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[50] W. H. Sheldon, Morphologic Types and Mental Ability, *Journal of Personnel Research*, 5: 447–451, 1927.

[51] W. H. Sheldon, Social Traits and Morphologic Types, *Journal of Personnel Research*, 6: 47–55, 1927.

[52] H. E. Garrett and W. N. Kellogg, The Relation of Physical Constitution to General Intelligence, Social Intelligence, and Emotional Stability, *Journal of Experimental Psychology*, 11: 113–129, 1928.

But the Garrett and Kellogg study sought to secure evidence relating to the association between body morphology and emotional stability as well. Garrett[53] had previously collaborated with Naccarati in an investigation utilizing the Woodworth Personal Data Sheet in which these authors thought they had found evidence for the relative emotional instability of macrosplanchnics as a group. The group just mentioned made the highest scores on the Woodworth Personal Data questionnaire, while at the same time ranking lowest in M.I. This would be fairly good evidence for associating emotional instability with macrosplanchnic type if it were not for the fact, as brought out by Paterson,[54] that, since there is no quantitative dividing line, arbitrary or otherwise, in terms of M.I. scores between microsplanchnics, normosplanchnics, and macrosplanchnics, indices indicative of macrosplanchny in one investigation may turn out to suggest asthenic or microsplanchnic types in another. This is exactly what happened to Naccarati's researches and yet he apparently thought little of it.

In duplicating and extending the Naccarati and Garrett study of personality factors, Garrett and Kellogg[55] secured results much less satisfactory to the thesis so ardently promoted by Naccarati when he insisted that "It now appears that there is also a positive relation between the morphological index and temperamental or emotional stability." Utilizing a social intelligence test as well as the Woodworth P.D. sheet they secured correlations with morphologic indices as indicated in Table 5.

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[53] S. Naccarati and H. E. Garrett, The Relation of Morphology to Temperament, *Journal of Abnormal and Social Psychology*, 19: 254–263, 1924–1925.

[54] D. G. Paterson, *op. cit.*, pp. 223–224.

[55] H. E. Garrett and W. N. Kellogg, *op. cit.*

TABLE 5.—COEFFICIENTS OF CORRELATION AMONG MORPHOLOGIC INDICES, THORNDIKE INTELLIGENCE SCORES, SOCIAL INTELLIGENCE RATINGS, AND EMOTIONAL STABILITY (WOODWORTH PERSONAL DATA SHEETS)

Tests	N	r	r (corrected for attenuation)
M.I. and Thorndike Score	206	.074 ± .047	.082
M.I. and Social Intelligence	123	−.055 ± .061	−.063
M.I. and P.D. Sheet	151	.047 ± .060	.050
Ht/Wt and Thorndike Score	204	.101 ± .047	.110
Ht/Wt and Social Intelligence	122	.051 ± .061	.057
Ht/Wt and P.D. Sheet	150	.088 ± .052	.093
Ht/Wt and M.I.	219	.810 ± .016	.822
Thorndike score and social intelligence	118	.420 ± .051	.515

From H. E. GARRETT and W. N. KELLOGG, The Relation of Physical Constitution to General Intelligence, Social Intelligence and Emotional Instability, *Journal of Experimental Psychology*, 11: 113–129, 1928.

In view of these near-zero figures, the authors were forced to conclude that their data afforded no evidence for a significant relationship between body build and tests of scholastic intelligence, social intelligence, or emotional stability.

Present Status of Naccarati's Body-type Concept.—About all we can see emerging from these researches is a slight but positive relationship. Too slight, indeed, to provide a basis for any predictions or classifications as suggested by Naccarati. Evidently intelligence and other personality components are psychological factors that accrue from complicated sources quite independently of body contour or height-weight ratios. About the only evidence for the latter centers around the relatively unimportant fact that public leaders, such as governors, senators, mayors, bishops, etc., are on the average taller and heavier than the general layman,[56] and that leaders in school activities tend to excel their fellows in the same respects.[57] In general, we must conclude that such complex group factors as test intelligence, emotional stability, and temperamental trends are relatively independent constellations of specialized factors, all of which cohere around the central personality as a directive agency. Investigators have been searching for connections between physique and personal factors on the uncertain assumption that intelligence and other more emotional personality traits are static entities dependent for their appearance upon innate physiological backgrounds, particularly the nervous system and glandular balance, when the evidence which we have been presenting in this volume indicates to a marked extent that perhaps personality qualities are psychological accretions growing out of the matrix of affective experience quite independently of bodily forms or functions. No search for the bases of human behavior, intellectual or temperamental, can safely ignore the profound influence of environmental pressures, since they apparently represent the genesis of the myriad of interlocked specific tendencies which go to make up the total personality.

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[56] E. B. GOWIN, *The Executive and His Control of Men*, The Macmillan Company, 1915.

Kretschmer's Morphologic Types and Psychotic Temperament. Like Naccarati, the German psychiatrist Kretschmer has developed an elaborate scheme of type psychology which has as its aim the linking of morphologic structure with character and personality differences, this time in the realm of psychotic temperament. Kretschmer, too, has attempted to identify two outstanding and contrasting types of body build which he believes are characterized by classifiable temperamental behavior patterns. He does, however, recognize two additional supplementary types to account for the very large percentage of individuals who obviously do not fit into the main contrasting classes.

Kretschmer's[58] four types may be described briefly as follows: (1) the *pyknic* type, or plump individual with a round heavyset body, short legs, thick neck, broad face, and full abdomen. This is practically the proverbial fat man. (2) The *asthenic* type (more recently called by Kretschmer the *leptosome* physique), or the individual with a relatively small trunk, sharp and lean features, long extremities, shallow chest, and generally tall for his weight. (3) The *athletic* type, which resembles the asthenic except for a more symmetrical development of muscles, firmer more robust structures, and a heavier, more athletic morphology in general, (4) The *dysplastic* type, composed of individuals of noncontrasting physique who, presumably owing to glandular and other anomalies, do not fit logically into the other three more clear-cut types.

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[57] G. C. Bellingrath, Qualities Associated with Leadership in the Extra-curricular Activities of the High School, *Teachers College Contributions to Education,* no. 399, 1930.

[58] E. Kretschmer, *Physique and Character* (trans. by W. J. H. Sprott), Harcourt, Brace & Company, 1925.

The chief thesis of Kretschmer's books hinges on the belief that there is a marked relationship between these morphologic types and indentifiable temperamental qualities. While he recognizes many mixtures between types and variations within a given group, he has always clung to the belief that certain psychotic temperaments are in a general way inherent in given body forms. From our previous mention of Kretschmer's type psychology it will be recalled that he derived his basis for this conviction from a study of out-and-out manic-depressive (circular) and dementia-praecox (schizophrenic) patients.

TABLE 6.—CLASSIFICATION OF CIRCULAR (MANIC-DEPRESSIVE) AND SCHIZOPHRENE (DEMENTIA PRAECOX) PATIENTS ON THE BASIS OF PHYSICAL TYPE

Body Types	Circular	Schizophrene
Asthenic	4	81
Athletic	3	31
Asthenico-athletic mixed	2	11
Pyknic	58	2
Pyknic mixture	14	3
Dysplastic	. .	34
Deformed and unclassified	4	13
Totals	85	175

From E. KRETSCHMER, *Physique and Character* (trans. by W. J. H. Sprott), Harcourt, Brace & Company, 1925, p. 35.

From Table 6 it can be seen that so far Kretschmer[59] is right when he says, "There is a clear biological appreciation between the psychic disposition of the manicdepressives and the pyknic body type." Also that "There is a clear biological affinity

[59] *Ibid.*, p. 36.

between the psychic disposition and the schizophrenics and the bodily disposition characteristic of the asthenics, athletics, and certain dysplastics."

Kretschmer's Assumption of Innate Types of Personality.—But Kretschmer was far from satisfied with his success among true psychotics. He held that normal people are characterized in a very mild way by distinct temperaments which are the normal counterparts of those found among the insane. To put it another way, this psychiatrist believes that the clear-cut manic-depressive (circular) and schizophrenic diseases are but ultimate amplifications and accentuations of equally distinct temperamental trends found in normal people.[60] Having made this momentous assumption, he proceeded to classify normals into two large contrasted groups—the *cyclothymes* and *schizothymes*, respectively.

While these designations may seem to suggest psychopathic trends among normals they are not so intended by Kretschmer who is merely applying a convenient contrasting classification to ordinary well adjusted individuals. As he personally affirms, "It must be pointed out clearly from the very start that the designations schizothymic and cyclothymic have nothing to do with the question of insanity, but are terms for large general biotypes . . . " (page 154). And since he recognized the relative nature of pathological mental mechanisms, Kretschmer offered the designations *cycloid* and *schizoid* for in-between or borderline cases.

Kretschmer's concluding step was to identify his two contrasting temperaments with the two principal types of body-build. Thus the normal cyclothyme temperament with its cheerfulness, good-nature, sociability, jolly humor, and general geniality (but with tendencies to fluctuate between hilarity and depression) is said to be the general style of life of the pyknic type individual. In direct contrast, the schizothyme temperament, which is characterized by reserve, eccentricity, timidity, sensitiveness, indifference, and lack of sociability, is regarded as the pattern of life of the more lean asthenics, athletics, some dysplastics, and various combinations of these. As Kretschmer[61] concludes in his more recent book, "Among sound normal people, the differences of bodily type express themselves above all in differences of temperament; that is to say, in differences of emotional constitution and mental sensitiveness." And it should not be overlooked that Kretschmer accounts for these temperamental differences, not in terms of the social environment, but on the basis of internal chemical reactions in the body as engineered by the cerebroglandular system.

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[60] This is essentially the same point of view that has more recently been advanced by Rosanoff in his theory of innate personality temperaments. As previously indicated, he regards normal people as possessing clearly discernible hysteroid, cycloid, schizoid, or epileptoid components, even though they are in no sense verging toward the uncontrolled temperamental manifestations of out-and-out psychotic individuals. Rosanoff does not, however, associate his alleged inborn temperaments with body builds or types.

Factual Evidence Touching on Kretschmer's Conclusions.—Kretschmer's hypothesis of a characterology based on an alleged concomitant relationship with well defined and contrasting body types was bound to meet with challenges from critical students of personality. In view of all the complex environmental factors involved in human growth and development, it seems too simple to conclude that one can gauge a man's probable character and temperament merely by observing his morphologic features. The whole procedure is too reminiscent of physiognomic days. Besides, Kretschmer's asthenic and pyknic types are obviously closely comparable to the ill-fated microsplanchnic and macrosplanchnic types, respectively, advanced by Naccarati.

While Kretschmer made close observations of the bodily features of his subjects, including skin texture, contour of nose, distribution of hair, shape of profile, and various other details of morphologic organization, unlike Naccarati, he indulged in but little accurate and detailed measurement of anatomical ratios. In fact, Kretschmer questioned whether such an approach would be profitable in the detection and classification of such types as he desired in drawing up a parallel between body morphology and potential psychotic temperament. But this subjective method has made it very difficult for other investigators to classify normal individuals sufficiently accurately to verify or disprove Kretschmer's claims.

In spite of this handicap, a number of research workers have done what they could to check up on the merits and demerits of this brand of type psychology. One of the best studies is that by Wertheimer and Hesketh.[62] Working in two Baltimore hospitals, these investigators went to great lengths to secure accurate morphologic indices for 11 apparently unquestionable manic-depressives and 23 carefully diagnosed schizophrenics. Not only did they use Kretschmer's observation method, but, in addition, they worked out a modification of the Naccarati morphologic index from a combination of fifty-three anthropometric measurements. With these data at hand they set out to answer two questions, first, how do such indices arrange themselves in a distribution curve? And, second, what is the relation between these indices and psychotic temperament?

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[61] E. Kretschmer, *The Psychology of Men of Genius*, Harcourt, Brace & Company, 1931, p. 53.

In answer to the first question, they found the usual situation and one which always works havoc with type schemes. While asthenic and pyknic types did not overlap, the intermediate position on the curve between them was occupied by mixed, composite individuals who constituted the majority of the cases. In brief, the morphologic index distributes itself normally just like any other measurable human attribute. Pyknic and asthenic types are merely extremes on the ends of a continuous scale the center of which is occupied by the more numerous, but less novel, intermediate individuals. Just as with Naccarati's morphologic types and Jung's introvert and extrovert types, so called, this type scheme fell apart when subjected to statistical analysis.

As for the correlation between morphologic index and psychotic make-up, the answer was rather clear and favorable as well to Kretschmer's hypothesis. With an average score of 233.2, the manic-depressives turned out to have a close connection with the pyknic body style. The schizophrenics, with an average of 280.7, while tending toward the asthenic type, were scattered much more widely over the complete range of types. This is good evidence for Kretschmer's theories, but it issues from a very small sampling of cases. Furthermore, the existence, if proved, of a body-build–psychotic-temperament connection among contrasted cases of insanity would prove nothing in the realm of what we are wont to call "normal" individuals. From the findings, this would appear to be particularly true in the case of the more variable asthenic type.

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[62] F. I. Wertheimer and F. E. Hesketh, The Significance of the Physical Constitution in Mental Diseases, *Medicine*, 5: 375–463, 1926.

In a study of 89 convicts in the Joliet, Ill., penitentiary, Mohr and Gundlach[63] compared individuals classified according to Kretschmer's types in terms of Army Alpha intelligence scores and various personality features. They found the asthenics to be in the lead with an average point score of 96.5 while the pyknics were only able to secure a figure of 57.9 (the athletics made a score of 79.2). This impressive superiority of the asthenics would be gratifying if entirely valid, but it must be recognized that the heterogeneity of stocks, social ratings, and ages among the convicts precludes such a conclusion. The general trend of the investigation, including personality differences, is, however, favorable to the Kretschmer doctrines.

Farr[64] has reported a hospital investigation in which anthropometric measurements were compared with types of psychosis. Careful and elaborate measurements were made in order to obtain as clear-cut body types as possible. These were then studied in relation to 25 psychotic males (15 schizoid and 10 affective) and 45 similar females (11 schizoid, 16 affectives, 13 miscellaneous, and 5 without psychosis). Farr summarizes from his findings as follows: "The figures suggest a rather definite association of seclusive and schizoidal personalities with the slender, relatively elongated types—often with dysplastic features—and of the affective personalities with intermediate or definitely thickset physiques. This is entirely in agreement with the observation of others, but the outstanding exceptions and the questionable correlations are so numerous that anthropometry must be looked upon rather as interesting and suggestive than as diagnostic."

Interpretations from Quantitative Evidence.—Once again we come into possession of data which, while on the surface apparently corroborative of the type idea, turn out to be uncertain because of the limited number of cases employed, the presence of questionable correlations, and what is perhaps even more significant, the presence of *so many outstanding exceptions.* So we must, in all honesty, agree with Farr and the other investigators that type psychology, with its dependence upon anthropometric (measurement of the body) techniques, is only suggestive; it is not an established science and thus must often impute, not diagnose, personality qualities of individuals of various body builds.

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[63] G. J. Mohr and R. H. Gundlack, The Relation Between Physique and Performance, *Journal of Experimental Psychology*, 10: 117–157, 1927.

[64] C. B. Farr, Bodily Structure, Personality and Reaction Types, *American Journal of Psychiatry*, 7: 231–244, 1927–1928.

We can conclude with Symonds:[65] "The clinical experience of such psychiatrists as Kretschmer has uncovered promising leads. But the scientific work of determining the exact relationships and making use of these relationships to fashion a measure of diagnostic significance yet remains to be done. Even when it is done, it cannot be used as a complete measure of temperamental differences, for there will still remain such factors as age, environmental stress and strain, etc., to accentuate or reduce the clearcut temperamental manifestations."

Anthropometric Measures and Personality Traits.—There are a few other approaches to intellectual and personality appraisal of an anthropometric nature, which, owing to their favorable standing in popular belief, should command our attention briefly. It is only fair that the student of personality be correctly informed concerning their status and contributions, if any, to characterology. We have reference to the Lombrosian theory of a criminal type, the doctrine of cranial indices of intelligence, and anthropometric measures of masculinity. Ardent beliefs concerning these and other such hypotheses are widespread among the laity and should as far as possible be clarified by vigorous experimental methods. Let us see what evidence we can muster that has a bearing on these questions.

Lombroso's Postulation of the Criminal Type.—During the latter half of the nineteenth century, considerable interest was in evidence concerning the etiology of crime, or, more specifically, what kind of people were given to criminal tendencies. The doctrine of potential delinquency was very much in vogue in those days so the quest was naturally for a distinguishable "type" that could be said to be responsible for the majority of crime. As usual the significant factors of personal frustration and cramping social influences were largely left out of account. The search was for atavistic *physical* anomalies.

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[65] P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1931, p. 514.

The name of Lombroso, head of the Italian school of criminologists, stands out as the leader of the movement to identify criminal types. Working in prisons and hospitals, on cadavers as well as on living subjects, this indefatigable investigator searched on for clues to the identity of criminalistic tendency. As Lombroso tells it, he stumbled on to the answer (as he thought) to his quest practically by chance.[66] It seems that he was working on the skull of a "brigand" when he noticed "an enormous middle occipital fossa, and a hypertrophy of the vermis, analogous to those that are found in inferior invertebrates." Whatever these things are, they meant to him that "the characters of primitive men and of inferior criminals must be reproduced in our time."

In a word, Lombroso thought to have found the key to criminality in the atavistic cortical organization. Thus primitive physical anomalies which could be identified by certain external "stigmata" came to be the accepted signs of potential criminality. On this assumed premise, the Lombrosian school erected its structure of the criminal type. In view of what we now know, this logic seems naïve, but at the time it evidently appeared very promising. At any rate, we are told that criminals can be detected by various physical attributes such, for example, as dark and thick hair, long and thick ears, pale and wrinkled skin, cleft lips, underdevelopment and overdevelopment of certain teeth, scanty eyebrows, and, most important of all, by a skull that may be rounded like a dome, depressed like a roof, keel-shaped, bulging with protuberances, or shaped like a "sugar-loaf." The criminal may also possess certain personality qualities ranging all the way from infantilism and ambidexterity to sensitivity to weather and disinclination to blush.

Fortunately, a rather thorough check has been made on the claims just advanced. In his elaborate study of 3,000 English criminals, Goring[67] subjected many of them to measurement and statistical examination. Subsequent to computing correlations among types of crime and a variety of head, face, and other Lombrosian criteria, in the course of which he secured only

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[66] Taken from a quotation in P. M. Symonds, *op. cit.*, p. 515.

[67] C. Goring, *The English Convict—A Statistical Study*, His Majesty's Stationary Office (London), 1913. Quoted by permission of the Controller of His Britannic Majesty's Stationary Office.

10 out of 37 coefficients in excess of .10, the author concluded: "With the exception of these ten, which will require more detailed investigation, we may say that these physical characters have no significant association with the nature of the crime committed. In other words, we conclude that if there be any real association between physical characteristics and crime, this is so microscopic in amount as not to be revealed by the values of our correlation ratios and coefficients of contingency."

In studying further the 10 correlations which did show some relationships to various factors, Goring came to the following conclusion: "Physical differences exist between different kinds of criminals, precisely as they exist between different kinds of law-abiding people. But, when allowance is made for a certain range of probable variation, and when they are reduced to a common standard of age, stature, intelligence, and class, etc., these differences tend entirely to disappear." And as for the comparative physical characteristics of criminals vs. noncriminals he states, "No evidence has emerged confirming the existence of a physical criminal type, such as Lombroso and his disciples have described. . . . There is no such thing as a physical criminal type." We see, then, that scientific evidence disposes of another alleged personality type. Criminal attitudes as well as other personality qualities defy certain detection in terms of physical ratios and stigmata.

Cranial Measurements as Indicators of Intelligence.—Something should be said concerning the widespread belief that there is a very close relationship between an individual's intelligence and the size and shape of his head, a belief that has evidently grown out of considerations touching on the phylogenetic development of man and his cultural heritage. The study of head contour, sometimes called *craniometry*, in relation to intelligence has received much attention from scientists, especially since the days of Francis Galton who, it will be remembered, was very much interested in securing criteria for the classification of intellectual status. The extant investigations in this field of characterology have been thoroughly reviewed by Paterson.[68] Our primary interest here is in the general findings and in acquainting ourselves with the nature of the interpretations that naturally emerge from the available evidence.

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[68] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, pp. 80–123.

The late nineteenth century studies, especially those by Galton[69] and by Binet[70] in Europe, and others by Porter[71] and by MacDonald[72] with American school children, are noteworthy but did not seem to solve the question of cranial measurements vs. intelligence to the satisfaction of all concerned. In an investigation of over 1,000 Cambridge University men, Galton concluded from head measurements (length × breadth × height) "'High Honor' men are presumably, as a class, both more precocious and more gifted throughout than others" because "men who obtain high honors have considerably larger brains than others at the age of nineteen." But as Paterson[73] says, had Galton made careful comparisons of men at later ages and had he computed correlations for each of the age groups, he would have come out with very low and chance coefficients. Thus in this case no close relation between head size and scholarship is in evidence.

Binet, who in his search for tests of intelligence utilized head measurements as well as many other approaches, found head-size differences between normal and mentally dull (retarded) children, but, from his data and meager statistical treatment, it is difficult to determine the real significance of the differences. Although he did not judge the intelligence of a child from head specifications, Binet was willing under certain circumstances to confirm a mental diagnosis on that basis. But nothing really definite has eventuated from Binet's work in this field.

In his study of St. Louis school children, Porter did find a low positive correlation between width of head and intelligence as judged by grade location (chronological age constant), but the differences were slight. His data indicate a relationship but certainly not a close one. In MacDonald's research, involving several thousand Washington, D. C., school children, very slight differences were found for head circumference of bright boys vs. average boys (as judged by teachers). These differences ranged from three-hundredths to sixteen-hundredths of an inch. This suggests a very slight positive correlation could such measures be secured. But an interesting feature of this study hinges on a comparison between the head measurements of white and negro pupils. In the interracial comparisons, the average head circumference of negro and white boys was much the same, but surprisingly enough in the case of girls that of the colored pupils was greater than that of the whites for every age. Such a finding does not synchronize with the notion that head size indicates intelligence—not unless we grant the absurd conclusion that negro girls are, as a class, brighter than their native white "sisters."

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[69] F. Galton, Head Growth in Students at the University of Cambridge, *Nature*, 38: 14–15, 1888.

[70] A. Binet, Recherches sur la technique de la mensuration de la tête vivante, *L'Année Psychologique*, vol. 7, 1900; A. Binet, Les Signes physiques de l'intelligence chez les enfants, *L'Année Psychologique*, vol. 16, 1910, pp. 312.

[71] W. T. Porter, The Physical Basis of Precocity and Dullness, *Transactions of the Academy of Science of St. Louis*, vol. 6, 1895, pp. 161–181.

[72] A. MacDonald, Experimental Study of Children, *Report of the United States Commissioner of Education*, vol. 1, 1897–1898. Chap. 21.

[73] D. G. Paterson, *op. cit.*, p. 85.

Of the more modern researches, the elaborate studies of Porteus[74] and his associates on cranial measurements in the diagnosis of feeble-mindedness are perhaps outstanding. After setting up cranial capacity norms, based on 10,000 children and university students, Porteus proceeded to compare the head measurements of various grades of feeble-minded children with these. He found significant differences mostly in the direction of small-headedness for the feeble-minded, but there were quite a few exceptions in the other direction. In direct opposition to many other investigators, especially Pearson,[75] he insisted that there are appreciable correlations between simple head measurements and intelligence. Porteus has thus involved himself in quite a controversy since it has long since been known that, although the intelligence of the sexes, at least among whites, is approximately equal, their head sizes are markedly different. This difficulty he has attempted to evade by assuming a sex difference in various personality traits which requires a larger head and brain in the case of the more ambitious, aggressive, and stolid males. But Paterson's[76] rebuttal arguments are interesting and very much to the point. He leaves little room for such rationalization of inconsistencies.

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[74] S. D. Porteus, Cephalometry of Feebleminded, *The Training School Bulletin*, 16: 49–72, 1919; R. J. A. Berry and S. D. Porteus, Intelligence and Social Valuation; A Practical Method for the Diagnosis of Mental Deficiency and Other Forms of Social Inefficiency, *Vineland Training School Research Publication*, no. 20, 1920, pp. 1–100; S. D. Porteus, and M. E. Babcock, *Temperament and Race*, Chapman & Grimes, 1926, pp. 1–364. See also the researches of Hull and his students in C. L. Hull, *Aptitude Testing*, World Book Company, 1928, Chap. 4.

[75] K. Pearson, Relationship of Intelligence to Size and Shape of the Head and Other Mental and Physical Characters, *Biometrika*, 5: 105–146, 1906.

From what has been said it would appear that the contention that there is an intimate relationship between head size or shape and intellectual status is very doubtful. The data indicate that such a position is nothing short of untenable. Since it does not fluctuate between individuals in close relation to intellect, it would be better to conclude that head-size variation is an attribute of sex and race. As things now stand, we can agree with Paterson that within a race or sex head shape and head size are "indifferently related to intellect."

Anthropometric Measures of Masculinity-femininity.—Another approach to the problem of discovering physical criteria for the presence of certain personality traits has been worked out by Ulvin[77] under the direction of Paterson. Proceeding on the generally accepted assumption that degrees of masculinity and femininity of men and women can be detected from certain physical secondary sex characteristics, which are presumably influenced by the secretion of sex hormones, this graduate student set out to discover the relationship, if any, between selected anthropometric and psychological measures of masculinity. Since men have been shown to have broader shoulders and narrower hips than women of comparable height, the shoulder-hip ratios were chosen as the physical criterion of masculinity or its opposite. And since the Stanford Play Interest Questionnaire,[78] used by Terman in his well-known investigation of gifted children, and the Pressey-Stephens Knowledge of Sports Test[79] are both measures of psychological attitudes capable of yielding striking sex differences as well as being unrelated to test intelligence, these were utilized as indices of psychological masculinity or femininity. Ulvin's task, then, came to be one of drawing up a series of correlations among and between the physical and psychological criteria choosen. Her study was based on data for 100 Minnesota freshman men and an equal number of freshman women.

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[76] D. G. Paterson, *op. cit.*, pp. 102–112.

[77] G. M. Ulvin, *A Study of the Relationship of Psychological and Anthropometric Measures of Masculinity*, Master of Arts' Thesis, University of Minnesota, 1927.

[78] L. M. Terman, *Genetic Studies of Genius*, vol. 1, *Mental and Physical Traits of A Thousand Gifted Children*, Stanford University Press, 1925, Chap. 14.

[79] W. Stephens, *An Investigation of the Interests of College Students in the Field of Sports*, Master of Arts' Thesis, Ohio State University, 1922.

On the psychological tests, the logical assumption was made that a male student who displayed a very meager knowledge of sports and who showed decided preferences for feminine play activities might well be judged as feminine and that, conversely, a female student who recorded preferences for masculine play and who had a wide knowledge of men's sports could logically be designated as being masculine in outlook. Actually, the two tests did produce striking sex differences. In the case of the play quiz, only 1 per cent of the women secured masculine scores higher than the mean of the men and none of the men went lower than the mean of the women. In the sports test only 5 per cent of the men scored below the mean of the women, while only 2 per cent of the women obtained indices that exceeded the mean for the men.

With this setup of two reliable lines of criteria of secondary sex characteristics, the investigator was naturally set to secure an appreciable correlation between them, both between the sexes and within the sex group. But after working out 90 correlations, Ulvin was able to display a range of coefficients of only $-.15$ to $+.23$, with the median at $+.02$, and with most probable errors hovering about $+.07$. Evidently, chance factors were at work in most of the data. Paterson[80] concludes that it is "obligatory" to recognize the fact that no significant relationship exists between these anthropometric and psychological measures of masculinity and femininity.

Once again the notion that physical and psychological factors are inherently and concomitantly related collapses. These diverse factors are evidently relatively independent of each other, the psychological phase being subject in its trends to the influence of environmental pressures, strong adherents of innate cerebroglandular potentiality to the contrary notwithstanding. Of course, as these authors recognize, the inclusion of many more cases, a greater control over even obscure factors, and a broader battery of psychological tests, as well as more elaborate measurements of a variety of physical secondary sex characteristics, might easily tell a different story. But as things now stand, we are under compulsion to recognize the doubtfulness of the relationship in question as well as the probable marked influence of experience and education on personality development.

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[80] D. G. Paterson, *op. cit.*, p. 265.

The Biochemical Approach to Personality Diagnosis.—It is only natural, in view of present-day knowledge touching on the importance of chemical processes in human-organism economy, that physiologists and others should seek for a biochemical basis for behavior patterns and personality differences. Believing as they so often do, that practically all human functions rest on a constitutional basis, these scientists hold that personality differences emerge as predetermined genetic patterns. To them it seems entirely feasible that particular behavior traits as well as temperamental expressions should be explicable in terms of biochemical formulas. This is another expression of the potentiality view which, while not entirely ignoring the effects of environmental influences and the conditioned response method of learning, rests its case largely on a selective, constitutional basis.

Investigations designed to explore the possibilities of personality diagnosis through biochemical determination have been carried on for some time by men who view the organism as a strict physiological unit (monism) and who thus think of personality attributes as functional manifestations of a dynamic physical instrument. They were seeking for and have been able to find fairly consistent relationships between physiological phenomena and chemical operations. Crile,[81] for example, has much to say in his books about the chemical basis of life. And Needham[82] glibly predicts from his evidence that we will some day be able to chart a detailed account of the chemical processes associated with mental activities. He speaks optimistically of "The Hope of a Chemical Psychology."

As the history of psychiatry shows, the earlier work in this field was carried out in connection with a study of the chemical backgrounds of the major mental diseases.[83] Quite consistent differences in alkaline and acid content of saliva, urine, and perspiration between pathological types were found in these pioneer researches. They forshadowed the findings and stimulated the inauguration of our more recent studies. But Starr's[84] chemical-analysis study of various kinds of stammerers was perhaps the precipitating cause of psychological interest in body chemistry. Starr demonstrated the interesting and significant fact that an excitable type of stammerer could be distinguished from one of a more apathetic disposition through the medium of a chemical analysis of his saliva. Whereas he found salivary alkalinity or neutrality in the excitable group, he discerned a distinct acid condition in the saliva of the more lethargic sufferers.

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[81] G. W. Crile, *A Bipolar Theory of Living Processes*, The Macmillan Company, 1926, pp. 1–405.

[82] J. Needham, Lucretius: The Hope of a Chemical Psychology, *Psychology*, 7: 3–19, 1927.

Rich's Work on Biochemical Analyses of Personality.—The outstanding research in differential body chemistry, utilizing normal children and adults, is generally conceded to be the one by Rich.[85] After securing personality ratings on good naturedness, perseverance, leadership, aggressiveness, and excitability for 39 undergraduate members of a fraternity by means of the composite opinions of fraternity brothers, for 18 male graduate students in psychology through instructor's ratings plus interappraisals among themselves, and for 303 children (Chicago Institute for Juvenile Research) by way of the joint ratings of institute officials, Rich computed a series of coefficients of correlation between these and biochemical standings. The results for the university men, as shown in Table 7, are most significant since they (the men) submitted for analysis saliva samplings and 24-hour urine specimens based on a controlled diet. The clinic children were judged by Wasserman-test blood specimens.

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[83] See the research of O. Folin and associates, Some Metabolism Studies with Special Reference to Mental Disease, *American Journal of Insanity*, 60: 702, 1904. Also D. S. Ludlom, Physiologic Psychiatry, *Medical Clinic of North America*, 2: 895, 1918.

[84] H. E. Starr, The Hydrogen-Ion Concentration of Mixed Saliva Considered as an Index of Fatigue and of Emotional Expression, and Applied to a study of the Metabolic Etiology of Stammering, *American Journal of Psychology*, 33: 394–418, 1922.

[85] G. J. Rich, A Biochemical Approach to the Study of Personality, *Journal of Abnormal and Social Psychology*, 23: 158–175, 1928. See also, by the same author, Body Acidity as Related to Emotional Excitability, *Archives of Neurology and Psychiatry*, 20: 589–594, 1928.

Table 7.—Coefficients of Correlation between Salivary and Urinary (Biochemical Analyses) Determinations and Personality Ratings

	Good Natured-ness	Perse-verance	Leader-ship	Aggres-sive-ness	Excit-ability	Intel-ligence
Salivary (hydrogen-ion concentration) pH...	+.03	+.07	−.09	+.09	+.28	+.29
Free acid (total).......	+.05	−.03	−.09	−.31	−.25	−.14
Free acid (per 100 c.c. urine)..............	−.15	−.15	−.24	−.19	−.02	−.04
Free acid per kg (body weight)............	+.01	+.02	−.25	−.43	−.38	−.21
Acidity (total formol titration).............	+.02	−.12	−.11	−.31	−.06	+.06
Acidity (formol per 100 c.c. urine)...........	−.24	−.22	−.32	−.25	+.11	+.17
Acidity per kg (body weight)............	−.03	−.05	−.32	−.49	−.22	−.08
Total acid (total)......	+.04	−.08	−.12	−.32	−.17	−.03
Total acid (per 100 c.c. urine)...............	−.21	−.23	−.27	−.20	+.09	+.11
Total acid per kg (body weight)............	−.02	.00	−.33	−.55	−.35	−.16
Creatinine (total)......	+.17	−.12	−.03	−.26	−.10	+.01
Creatinine (per 100 c.c. urine)..............	−.19	−.26	−.37	−.31	+.08	+.19
Creatinine per kg (body weight)............	+.13	+.04	−.04	−.29	−.24	−.32
Phosphorus (total).....	+.26	−.12	+.06	−.12	−.11	−.43
Phosphorus (per 100 c.c. urine)..............	−.07	−.24	−.30	−.22	+.04	−.17
Phosphorus per kg (body weight).......	+.20	−.06	−.09	−.22	−.18	−.51
Volume of urine........	+.32	+.21	+.42	+.13	−.21	−.24
Body weight...........	+.08	−.09	+.30	+.23	+.23	+.23

From G. J. Rich, A Biochemical Approach to the Study of Personality, *Journal of Abnormal and Social Psychology*, 23: 158–175, 1928.

While these results are based on small samplings and would naturally suffer from errors in both the biochemical measurements and personality ratings, it must be admitted that Rich has reaffirmed former investigations with abnormals and that he has in addition discovered noticeable relationships between personality qualities and acidity of urine and saliva in the case of normal subjects. Through a determination of the hydrogen-ion concentration of the saliva, he discerned a positive association between the alkalinity of saliva and ratings for aggressiveness and excitability. This means that whereas the apathetic individual is given to *acid* content in his saliva, the excitable person is characterized by *alkalinity*. Such a finding is obviously suggestive for personality diagnosis.

In an effort to learn whether the series of low positive and negative correlations in Rich's tables were determined largely by chance, Paterson[86] correlated (by the rank-difference method) corresponding columns in the tables for graduate and for undergraduate students. His coefficients of .58 for good-naturedness, .40 for perseverance, .40 for leadership, .48 for aggressiveness, and .56 for excitability convinced him that chance factors were not alone operative. He comments, "Biochemical personality relationships are shown to exist to a measurable degree between these two independent series of observations."

As his data show, Rich also found a correspondence between personality traits and creatinine concentration in the urine. Such creatinine condition correlated −.10 with excitability ratings for the undergraduate students and −.24 with the same trait in the case of the graduate subjects. Since creatinine is a metabolic product issuing from muscular activity in accordance with body weight and in proportion to the excitability of the individual, determination of the extent of its presence in the urine constitutes a clue to personality trends. Nevertheless, as Rich indicates from this and other relationships, the results of his work are incomplete and too tentative to date to warrant the positive forecasting of personality differences based on biochemical disclosures. But we would add that he has pioneered a field that bids fair to make a substantial contribution to the growing science of personality psychology. The future may disclose the futility of seeking for a chemical basis of personality-appraisal; environmental-factors may turn out to be the determiners of personal organization; but for the present we must suspend our judgment and be in readiness to follow the testimony of the facts as they accrue.

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[86] D. G. Paterson, *op. cit.*, pp. 253–254.

Chemical Compounds of the Blood as Sources of Diagnosis.—Before leaving this section we should mention two attempts to establish blood chemistry as a basis for personality expression. As mentioned in our chapter on emotions, Gray[87] has advanced the theory that all emotional reactions, instead of being regarded as semimental in nature or as dependent upon thalamic action as Cannon[88] would have it, should properly be thought of as issuing from chemical combinations resident in the blood at the time and compounded by the cooperative activity of the glandular system. Gray's theory, which represents a behavioristic effort to get away from all things mental, credits the pattern of any given emotional reaction to the chemical constituency of the blood as occasioned by the circumstances of an exciting situation. This theory, instead of settling anything, however, has merely served to raise academic arguments. Whether it can be substantiated remains to be seen.

In a study carried out under the supervision of Hull and Van Tassel[89] an effort was made to ascertain the possible connection between hemoglobin content in the blood and tendency toward activity requiring energy output. First, a "rough but rapid" colorometric test of blood redness was made on 80 Wisconsin freshman engineers. Secondly, the chemical indices secured were correlated with 17 grades in English, chemistry, mathematics, mechanical drawing, and shopwork, courses which presumably made energy demands on the young engineers. Some of the resulting coefficients were positive and some were negative, but all were small. The figure for correlation with an average of the five school marks was −.02. Evidently there is no particular connection between the two factors studied. We wonder what it would have been if nonintellectual attributes had been the personality factors under examination.

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[87] J. S. Gray, An Objective Theory of Emotion, *Psychological Review*, 42: 108–116, 1935.

[88] W. B. Cannon, *Bodily Changes in Pain, Hunger, Fear and Rage*, D. Appleton-Century Company, Inc., 1929.

[89] C. L. Hull, *op. cit.*, p. 152.

In conclusion we can say that there appears to be much more optimism among critical workers for the possibility of the chemical approach to personality diagnosis than for practically any of the other physiological systems reviewed thus far in this chapter. There seems to be a feeling that chemical determinations of personality may turn out to be not only scientifically valid, but productive of knowledge touching on the constitutional basis of personality differences in both behavior and temperament. When tied in with a study of the operations of the glands of internal secretion it may be that the chemical approach will eventuate in a clarification of our knowledge of personality matters. So we turn our attention at this point to a scrutiny of the endocrinological approach.

IV. THE ENDOCRINOLOGICAL ATTACK ON PERSONALITY EVALUATION

Dr. Abraham Roback[90] uttered, inadvertently perhaps, a trenchant expression when, in introducing his discussion on endocrinology, he coined the caption "Lure of the Glands." The glands have lured mankind ever since the days of Hippocrates when the four now venerable temperaments—sanguine, choleric, melancholic, and phlegmatic—were assumed as controlling functions of certain smooth-muscle organs—the duct and ductless glands. But it is during the last two or three decades since we have become so impressed with the modern monistic idea of a physical basis for mental life and since we have witnessed so many astonishing surgical controls of endocrine-gland processes, that the hope, and often the belief, has arisen that we can chart personality pictures and solve the problems of personality regulation through the avenue of glandular control.

From what we know of physiological processes in general, it seems certain that organismic relationships exist between endocrine-gland functioning and both intellectual and non-intellectual personality traits. And that these will be disclosed in due time is entirely likely, especially if endocrinologists and psychologists can work together on the common ground of personality diagnosis in search of objective answers to such questions as, "What role do the endocrine glands play in producing changes in personality of the individual from birth to senescence? What part do the endocrine glands normally play in making for differences between individuals? What changes can result from malfunctioning of the endocrine glands? Finally, what changes can be produced by the experimental alteration of amounts of hormone in the body?"[91]

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[90] A. A. Roback, *The Psychology of Character*, Harcourt, Brace & Company, 1927, p. 338.

That our knowledge of the influence of endocrine-gland action in individual behavior is far too restricted to provide quantitative answers to the above questions is a commonplace with scientific men, but all are agreed that we should and can push on to an experimental solution of these and other vexing problems of physiological psychology. A number of enlightening and suggestive investigations, some of which we shall mention a little later, are already available for service in bridging the gap of our ignorance. The important thing, in the meantime, however, is to recognize frankly the status of the field and not to take too many things for granted, *i.e.*, not to indulge in exhilerating flights of rhetoric inspired by the endocrine "lure" which arouse false hopes on the part of the academically uninitiated.

Claims as to Glandular Regulation of Personality.—But some people cannot refrain from the temptation to engage in making exaggerated claims in this fascinating field. The fact that their statements frequently far exceed the boundaries of present knowledge and that their "findings" obtain in linquistic terms only, seems to worry them not at all. They like to build subjective systems and since there is no law against the same, it seems that nothing can be done about it. There are a number of writers who could be mentioned in this connection, but since Berman is generally conceded to be the chief spokesman of the group, perhaps we had better hear from him. In his original book,[92] in which he sets forth the thesis that personality is regulated by the glands, he asserts that the life span is characterized by a series of epochs in each of which a certain gland is in control to provide the personality ear-marks of that age. To be specific, (1) infancy is the epoch of the thymus, (2) childhood is the epoch of the pineal, (3) adolescence is the epoch of the gonads, (4) maturity is the epoch of whatever gland has weathered the storm of life struggle to date, and (5) old age, or senility, is the epoch of general endocrine decline. Obviously, the principal weakness of such a scheme is due to the possibility and likelihood that the glands themselves are subject to the influence of other underlying factors and external agents.

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[91] D. J. INGLE, Endocrine Function and Personality, *Psychological Review,* 42: 466, 1935.

[92] L. BERMAN, *The Glands Regulating Personality,* The Macmillan Company, 1921, pp. 294–296.

Berman[93] further contends that "The bulk of evidence demonstrates that the changes in constitution and personality in the embryo, the child, the adolescent, and the adult, producible by changes in the glands of internal secretion far outnumber changes elicitable by other agencies." And further, "As the key points of his chemical machinery, they are the mediators, not only between the individual and his heredity, but also between the individual and his environment. No one, therefore, can exaggerate their significance." In a word, this writer is expounding the restricted and naïve view that developments and changes in personality are brought about largely by one direct and almost exclusive intraorganic agent—the endocrine system.

In view of the utter complexity of the human personality, not to mention the galaxy of interrelated and frequently obscure social factors which combine in endless shifting patterns to condition its trends, we can but stand in awe of such declarations. But like the fascinating schemes of many other subjective writers, Berman's rhetorical speculations rather easily delude the unsuspecting individual into believing that endocrinology is now an established and scientifically accepted system of personality appraisal. Unfortunately the endocrine-personality enigma is not that simple. Yet, "The genial seductiveness of verbalism masquerading as causal science lures as ready victims all who have not been immunized by exposure to the rigors of quantitative, experimental, inductive method."[94]

More conservative theorists and investigators are inclined to emphasize the cooperative role played by endocrine processes and secretions. They see the results that have been achieved through endocrinotherapy but they also recognize the highly important hypothesis that glands cannot determine personality trends *independently of social conditions.*[95] Adler,[96] probably because of his ardent belief in the psychogenic nature of the all important inferiority "complex," goes on record as declaring that, of themselves, endocrines cannot constitute the basis of character, also that glands cannot force an individual into any particular attitude. The truth of the matter is that the determiners of character and personality are many and that they represent a mosaic in which endocrine functions, like other processes, are an inseparable aspect. Little is known of the specific relations that given endocrine glands may have with specific personality traits. But that the endocrines have an important share in the total economy of organismic behavior seems undeniable.

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[93] L. Berman, *The Personal Equation*, Geo. Allen and Unwin (London), 1925, p. x.

[94] D. G. Paterson, *op. cit.*, p. 239.

Gordon,[97] a physician, in commenting on the paucity of our knowledge of endocrine influences brings out the point that the a priori nature of many of our statements are due to the fact that the endocrine system works as a whole in the sense that if one gland drops out the others tend to compensate by overactivity, thus making it extremely difficult, if not impossible, to determine the special function of one gland or of a combination of glands. Moreover, we do not fully understand the nature of the interaction between the glands and the nervous system, a relationship which must be very close and which may, for all we know, be largely compensatory in function. This is no doubt what the investigator Josefson[98] had in mind when, even after securing remarkable results from feeding thyroid extract to cretins, he hesitated to say just what role such endocrine treatment plays in the shaping of personality "as compared with other factors."

Present State of Knowledge concerning Endocrine Functions. In commenting that little is known concerning definite psychological states that follow upon conditions and disturbances in specific endocrine glands, we do not mean to give the impression that only a little is known of glandular processes in general.

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[95] J. H. Griffiths, *The Psychology of Human Behavior,* Farrar & Rinehart, Inc., 1935, p. 493.

[96] A. Adler, *Understanding Human Nature,* Doubleday, Doran & Company, Inc., 1927, pp. 187–188.

[97] R. S. Gordon, *Personality,* Harcourt, Brace & Company, 1926, pp. 65–66.

[98] A. Josefson, Endokrine Drusen und die Personlichkeit, *Ergebnisse die gesamte Medizin,* 6: 387, 1925.

It is generally conceded that all bodily functions, such as growth, sex activity, digestion, metabolism, etc., as well as the psychological reaction which we associate with moods, emotions, and mental development, are strongly influenced by the stimulating effects of the hormones or autocoids poured into the blood stream by the ductless glands of internal secretion. Moss and Hunt[99] regard these agents, which vitally influence the nervous system itself, as "the most important of the non-nervous determinants of mental behavior." In short, the endocrines, through their chemical secretions, are thought to assist in the control of the intensity and rhythm of practically every vital process of the organism.

Although it is the consensus of all competent physiologists that the endocrine system is an integrated configuration in which the action and influence of any given gland is contingent upon the intensity of activity of every other gland, as well as upon the chemical state of affairs in all other cooperating agencies —blood acidity or alkalinity, for example—it is possible from evidence now available to say something about the general functions of each of the ductless glands as a subunit.[100]

In our presentation of the process involved in emotion (Chap. VI), we went into some detail concerning the part *adrenaline*, the powerful drug secreted by the suprarenal medulla, plays in effecting responses to exciting stimuli. This hormone, which has been isolated and successfully synthesized from the formula $C_9H_{13}O_3N$, is essentially the actuator of heart, lungs, and the vascular system in general. It also circumscribes the activities of the digestive system.

The *thymus* gland, located in the thorax, and the *pineal*, within the brain, back of the eye level, are both apparently concerned with the regulation of childhood growth. They seem to be connected with the muscular system in such a way as to control rate of growth and inhibit precocious appearance of secondary sex characteristics. Related to these are the important *gonad* glands, which, in addition to producing the germ cells concerned with reproduction, secrete the secondary sex hormone which, when poured into the blood stream prior to adolescence, are responsible for the development of bodily characteristics associated with both mature masculinity and femininity. Absence of the gonadal hormones results in failure to develop strong sex characteristics.

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[99] F. A. Moss and T. Hunt, *Foundations of Abnormal Psychology*, Prentice-Hall, Inc., 1932, pp. 341–346.

[100] For substantial accounts of these functions the reader is referred especially to W. Timme, *Lectures on Endocrinology*, Harper & Brothers, 1924; and F. A. Moss and T. Hunt, *op. cit.*, Chap. 14.

Another gland concerned with the regulation of bodily growth and sex development is the *pituitary*, located in the head in a pocket on the under side of the brain. When overactive, the anterior pituitary hormone produces excessive growth or gigantism. Hypoactivity of this lobe may result in the production of symmetrical dwarfs (midgets) characterized by normal intelligence, but subnormal sex development. As for the posterior pituitary, its autocoid seems to be concerned with the regulation of body fat. Underactivity of this hormone may eventuate in obesity.

But the ductless gland which has thus far proved to be most amenable to control is the *thyroid*—normally a small endocrine imbedded at the base of the neck in front of the windpipe. The principal function of the thyroid is to regulate and speed up the process of metabolism. Consequently, when this gland is underactive or deficient, the individual is invariably dull, sluggish, and generally given to lassitude. Hyperactivity of the thyroid results, conversely, in restlessness, irritability, and general instability. In cases where this gland is defective from birth or is lost in childhood, we see the results in *cretinism*, a disturbance characterized by stunted growth, misshapen body, apathy, weak recuperative powers, and general mental deficiency. A cretinoid condition may, however, be developed in the adult years as a result of a goiter operation in which the thyroid gland is removed or becomes defective. In this case, the malady is called *myxedema*.

One of the marvels of modern medicine may be seen in the successful restoration of myxedematous persons, and to some extent cretins, by the use of sheep's thyroid or the synthetic substitute, thyroxin (formula $C_{15}H_{11}O_4NI_4$). This preparation contains, in addition to its other elements, a large percentage of iodine, a deficiency of which is responsible for the maladies mentioned. Thus medicine has been able, to some extent, to alleviate the mental and physical ills attendent upon thyroid dysfunctioning by developing chemical substitutes for deficient internal secretion processes.

Evidence for Glandular Influence on Intellectual Status.—As might be expected, such progress has led some to speculate wildly as to the possibilities of endocrine therapy, both physical and mental. Because cretinism is known to be associated with hypothyroidism, it has been unwarrantedly assumed that a mild diminution of thyroid activity will result in a corresponding decline in mental ability and, most presumptuous of all, that the discovery of thyroxin will result in the wholesome and miraculous transformation of mentally subnormal children in a relatively short time. As a matter of fact, such data as are available indicate that neither intellectual nor nonintellectual personality traits are always necessarily related to endocrine dysfunction, causally or otherwise, and that, as a consequence, endocrine therapy does by no means always result in the physical and intellectual improvement of hypothyroid cases. Indeed, it appears from the studies that mental deficiencies based on endocrine dysfunction are seldom corrected except in cases of moderate deficiency, where the individual comes from reasonably good stock, and in cases where the treatment is inaugurated very early in life.[101]

Several studies dealing with the association between intellectual status and hypothyroidism of a less serious nature than out-and-out cretinism are extant. In a group of 100 hypothyroid patients, from which cretinism had been excluded, Lawrence and Rowe[102] found only 6 per cent to be retarded mentally. Rowe[103] discovered the same percentage of intellectual retardation among 185 cases of pituitary dysfunction, although in a control group of 500 showing simulated endocrine dysfunction, only 1.6 per cent were so afflicted.

Fox,[104] in reporting on 182 cases of glandular malfunction, all less than sixteen years of age, tells us that the average I.Q. for

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[101] H. W. Potter, Endocrine Therapy in Mental Deficiency, *Endocrinology*, 7: 25–40, 1923.

[102] C. H. Lawrence and A. W. Rowe, Studies of the Endocrine Glands. III. The Thyroid, *Endocrinology*, 12: 377–450, 1928.

[103] A. W. Rowe, Studies of the Endocrine Glands. VIII. The Differential Diagnosis of Endocrine Disorders, *Endocrinology*, 13: 327–362, 1929.

[104] E. J. Fox, An Investigation of the Effect of Glandular Therapy on the Intelligence Quotient, *Mental Hygiene*, 12: 90–102, 1928.

101 hypothyroid patients was only 75 and that for 23 hypopituitary individuals was 74. But these apparently low quotients take on a different meaning when Fox adds that the average I.Q. for a total of 1,867 endocrinopathies passing through the clinic was only 78. Here again there is only a slight difference between the average clinical case and those suffering from mild hypofunction of thyroid or pituitary gland.

In studying the alleged effects of simple goiter (enlarged thyroid gland) on intellectual status, Dr. Olesen[105] of the United States Public Health service (and an associate) arranged 1,292 sixth-grade boys and 988 sixth-grade girls into percentile groups based on Otis I.Q. scores for the purpose of comparing the relative intellectual status of normal children with that of sufferers from simple, endemic goiter. The resulting distributions of scores were so nearly the same for normal and for enlarged goiter boys and girls as to lead the author to conclude: "It appears that the results of this study are largely negative, in that no relationship between enlarged thyroid and intelligence has been demonstrated." Similar results were obtained by Stocks, Stocks, and Karn[106] in a correlation study featuring the relationship between enlarged thyroid measurements and school marks. From a sampling of 489 school girls, they secured a coefficient of only .08 ± .03 (corrected for height and age). This finding certainly does not bespeak much of a connection between mental retardation and presence of simple goiter.

Personality Improvement through Glandular Feeding.—In coming to investigations dealing with therapy through glandular feeding, we should like to remind the reader that it is not uncommon for physicians to secure very gratifying physical results with little or no corresponding mental changes.[107] This is another point in a long line of evidence indicating that although what we call mental activity is an inseparable aspect of the functioning of the organism as a whole, it enjoys relative internal independence in its development and is thus apparently not contingent upon given physical conditions for its integrity.

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[105] R. Olesen and M. R. Fernald, Endemic Goitre and Intelligence, *United States Public Health Reports*, 41: 971–986, 1926.

[106] P. Stocks, A. V. Stocks, and M. N. Karn, Goitre in Adolescence: An Anthropometric Study of the Relation between Size of the Thyroid Gland and Physical and Mental Development, *Biometrika*, 19: 292–353, 1927.

[107] This is the experience reported by A. F. Tredgold, *Mental Deficiency*, Baillière, Tindall & Cox (London), 1920, p. 294.

In her previously mentioned report, Fox[108] gives the results of glandular therapy for a group of 22 cases covering a period of from 4 months to 2 years. Contrary to expectation, the average gain in I.Q. points was only 1.5. A range of from −2 for hypopituitary cases to +4 for pluriglandular individuals was in evidence. The 12 thyroid cases achieved an average gain of a mere 1 point. It will be recognized, of course, that these fluctuations are no larger than those that usually appear in repeated tests with ordinary children. But it should be mentioned that the physical and emotional benefits of the glandular treatment were in this case decidedly noticeable. Results comparable to these were the outcome of Potter's[109] study of mentally defective institutional cases. Although this investigator did not utilize mental measurements as end tests (as we might have wished), from his estimates of intellectual improvement following glandular treatment, he was forced to conclude that the benefits of glandular feeding are not very striking. Thus endocrinological therapy again fails as a panacea for intellectual deficiency.

Our last study is concerned with the possibility of improving the status of dementia praecox patients suffering from endocrine involvements. Of 37 such patients, 18 were improved by glandular treatment. The investigators Hoskins and Sleeper[110] state that, on the other hand, only 5 out of a group of 36 similar sufferers, but with normal endocrine functions, yielded to the endocrinotherapy program. These are small samplings but the results suggest that perhaps glandular treatment is more effective in clearing up psychotic disturbances than it is in correcting mental deficiencies. This is only an hypothesis however.[111]

Uncertainty of the Endocrine-personality Relation.—In gathering together the various threads of evidence touching on the endocrine-personality relation we must recognize first of all that normal personality is dependent upon the presence of these glands just as it is upon other physiological processes. Changes in personality, intellectual or temperamental, follow upon marked alterations of hormone secretion in certain glands much more often than chance would permit. But the fact that personality modifications do by no means always accompany moderate endocrine deficiencies indicates that psychological qualities are not inevitably dependent upon endocrinological bases. It would be more in harmony with the facts as we know them, to regard endocrine balance as essential to the integrity of the physical organism but to acknowledge that within a fairly wide range of deviation the ductless glands are powerless to effect changes in personality.

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[108] E. J. Fox, *op. cit.*

[109] H. W. Potter, *op. cit.*

[110] R. G. Hoskins and F. H. Sleeper, Endocrine Studies in Dementia Praecox, *Endocrinology*, 13: 245–262, 1929.

[111] In defense of such a view one could mention the position taken by Moss and Hunt that so-called functional psychoses are in many cases probably an expression of endocrine disturbance (F. A. Moss and T. Hunt, *Foundations of Abnormal Psychology*, Prentice-Hall, Inc., 1932, p. 346).

As we have brought out before, it seems quite clear that psychological development can and does proceed quite independently of physiological conditions except, of course, when the central nervous system is attacked by disease or injury. And, incidentally, the nervous system, which is so admirably protected from abnormal conditions, is probably the very agent most capable of compensating for moderate degrees of endocrine imbalance. As so many psychologists, Woodworth,[112] for example, have suggested, the personality can withstand a certain amount of glandular dysfunction because of the capacity of nervous tissue to maintain a balance even against such odds. From this angle, we can say that character and personality are to a certain degree at least relatively independent of physiological involvements. The endocrines, like so many other physical factors, are apparently not the primary determiners of personality. A man's psychological individuality is evidently the product of a multitude of interlaced factors, the most influential of which are apparently social and psychological in nature. Thus, a knowledge of the functions of the integrated endocrine system, no matter how complete, can never solve all of the problems of conduct and character. Life is more than chemical affinities and autonomic processes.

V. SUMMARY AND IMPLICATIONS

Conclusions from the Evidence.—If we judge by the nature of the evidence that has accumulated in our survey of available studies on the subject, logic would appear to dictate the tentative conclusion that both intellectual and nonintellectual personality traits are relatively independent of the conditions which obtain in the organism which gives rise to them. In the subjective pseudo systems of characterology, we found practically nothing but conjecture; in the Nacarrati morphologic scheme, the structure broke down under the weight of disparaging quantitative evidence; in Kretschmer's assumptions, we found support for temperamental body types among the psychotics but not in the realm of normals; cranial measurements yielded us no evidence of an intimate relation between physique and intellect; we were disappointed in our search for an anatomical basis for masculinity and femininity; our survey of the chemical approach netted us only meager and moderately promising clues; and finally, the glands, their lure notwithstanding, dashed our hopes of finding a true physical basis for intellect and temperament.

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[112] R. S. Woodworth, *Psychology*, 3d ed., Henry Holt & Company, 1934, p. 122.

From these researches, as well as others[113] which tell the same story, we are brought face to face with the realization that the human organism, closely knit physiopsychological unit that it is, is in reality a very complex integration of functionally related aspects which in some instances maintain sufficient independence of each other to defy even quantitative efforts to appraise one by recourse to measurement of another. The simplest among us can understand, then, that he who wishes to ascertain the status of any given component of the personality must per se proceed to find, by use of standard units of measurement, the specifications of the specific component in question. Indirect appraisals have not proved trustworthy. For the most part, we conclude, character and personality qualities cannot be appraised through loose observation or measurement of even combinations of physical characters.

Implications for the Mind-body Problem.—It is interesting to contemplate the implications of the apparent paradox between (1) the ascertained fact that anatomy is not the physical basis of intellect or temperament and (2) the theoretical premise that, since philosophically and naturalistically body and mind are one, a modification in one of these aspects will axiomatically result in the modification of the other. How can the low correlations between physical and psychological aspects of the organism be harmonized with the assumption of a monistic philosophy? This is, of course, one of the problems of the ages and one which we can hope to answer only in a limited way.

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[113] A. I. Gates and others, Summary of Representative Studies of the Relation between Physical and Mental Traits, Made in the United States from 1893 to 1923, *Teacher's College Record*, 25: 229–231, 1924.

In harmony with the trend of the evidence as we understand it and as we have endeavored to interpret it throughout this volume, we would reason as follows: In the light of present biological knowledge all physical characters may be said to be gene inherited in accordance with naturalistic ratios; thus they are potential in the genetic constitution and may be expected under reasonably normal conditions to eventuate as predetermined in gene organization. But the same is not necessarily true of what we call intelligence. It has not been shown to be inherited on the basis of gene-determined ratios. Although it is most certainly dependent upon inherited physical structure, neural and otherwise, for its appearance, it represents a retained and integrated accumulation of meaningful experience which is not necessarily dependent upon certain quality or quantity of cortical and other somatic structure for its development.

In this sense, ultimate intellectual status is not strictly potential and does not need to follow anatomical or physiological maturation in its own growth. It arises out of the activity of nervous and related physiological processes, but is not necessarily a function of their degree of development. Thus physiological and intellectual (psychological) states can be, and apparently often are, quite unrelated. One proceeds at a predetermined potential-maturation rate while the other develops at a tempo dictated by social experience and cultural opportunity. Incidentally, the same logic would probably hold for the development of nonintellectual personality attributes as well—they too are the products of affective and meaningful experience, *i.e.*, they are personal accretions[114] of a psychological nature and are thus not strictly dependent upon either physical conditions or innate potential forces.

It does little good to fall back on the argument that the brain, or the whole nervous system for that matter, is the seat of the intellect or "mind." Lashley[115] has long since shown that while learnings grow out of cortical activity, these are not subsequently dependent upon the brain in the sense of being stored therein. Experiments on animals and in injury cases on humans indicate that, although loss of given cortical tissues interferes with learnings that are under process of development, such loss does not always impair the retention of already well-learned functions. The brain, as the crest of the spinal gradient, provides both the physical basis for the appearance of mental processes and the direction of energy distribution for metabolic purposes, but it is not a storehouse of psychological learnings. As the evidence presented in this chapter suggests, these are relatively independent of the status or specifications of physical characters (except, of course, in the case of definite cortical pathology).

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[114] See H. C. Morrison, *Basic Principles in Education*, Houghton Mifflin Company, 1934, Chap. 7.

[115] K. S. Lashley, *Brain Mechanisms and Intelligence*, University of Chicago Press, 1929. See also, by the same author, Basic Neural Mechanisms in Behavior, *Psychological Review*, 37: 1–24, 1930.

If this line of logic can be regarded as retaining the scientifically necessary principle of physical causation from a monistic point of view, while at the same time synchronizing with the testimony of the evidence for indifferent correlations between physical factors and both intellectual and nonintellectual (temperamental) personality traits, well and good. If, however, such a suggestion seems to involve too many unsettled questions, the reader is welcome to devise a tentative solution of his own, if such he deems possible. In the meantime we must, in harmony with the spirit of scientific progress, remember that both the data and the interpretations advanced are based on the present status of rather fragmentary knowledge. Newer and more critical techniques may and probably will upset many of our present conclusions. Thus it behooves us to keep ourselves in a state of readiness to follow new evidence and to assist in the further clarification of the baffling problems of human personality organization.

QUESTIONS FOR STIMULATING THOUGHT AND DISCUSSION

1. In the light of present knowledge, as you understand it, would you advocate the abandonment of all efforts to associate personality qualities with physiological features in man? Be prepared to defend your answer with data and logic.
2. How in your judgment did men come to believe that "every trait of character and every mental aptitude, every virtue and vice, ability, interest and capacity, had each its own shelf or pew in the brain area"? Can you prove from physiological and psychological evidence that such a proposal is naïve and untenable? Try to do so.
3. Of the three so-called "sciences" of phrenology, physiognomy, and graphology, which appears most plausible and promising from a psycho-

logical point of view? In planning an answer consider the logic of the situation as well as data that may have appeared since the publication of this volume.

4. Mention reasons other than those mentioned in the text why so many people think they can successfully read other individuals' character and personality. Can it be proved that industrial concerns have actually spent sums of money on alleged characterology systems? What can be done to disabuse the public of these pseudo systems?
5. Why have such promising physiological systems as those by Naccarati and Kretschmer turned out to be so disappointing? What tremendously important factors did they tend to ignore in their theories? Did their systems tend to posit personality traits as static entities? Explain.
6. What are the underlying fallacies in the Lombrosian theory of criminal type as well as other such head-measuring systems? Is the notion of innate moral imbecility in the same class with these or is it an established fact? Utilize tangible evidence in offering an answer.
7. How would you defend the thesis that the biochemical approach to personality appraisal is the most hopeful of all physiological systems? How does this view harmonize with the widespread belief that personality attributes are determined largely by environmental influences?
8. Why have we not been able to realize the hope of personality building or reconstruction through gland regulation? Does this mean that there is no causal connection between endocrine function and personality status? What is the evidence for the presence or absence of such a relationship? Be definite.
9. In the light of what we know about the interdependent functions of the various glands of internal secretion, can it be said that they influence personality independently of social conditions? Would you go as far as some psychologists do and suggest that possibly certain endocrine dysfunctions (*i.e.* thyroid imbalance) are caused by psychological disturbances? Explain.
10. Does evidence to date indicate that when the facts are ultimately known we will see that intelligent glandular therapy does exercise a marked improvement in the intellectual status of endocrinological cases? Why do you think results thus far have been as meager as they have?
11. How does the lack of evidence for a close relationship between personality attributes and physiological structures and functions argue for the nonpotential nature of mental and temperamental qualities in man? How does this argument harmonize with the notion of the unity of so-called "mind and body"?
12. If the status of personality qualities cannot be ascertained by way of physical measurements and physiological functions, how are we to evaluate them in anything like a critical fashion? Can we, in harmony with the principle of specificity, measure personality qualities directly? How?

Recommended Readings

Allport, G. W.: *Personality, A Psychological Interpretation*, New York: Henry Holt & Company, Inc., 1937, Chap. 3.

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Sheldon, W. H.: Morphologic Types and Mental Ability, *Journal of Personnel Research*, 5: 447–451, 1927.

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CHAPTER XI

PSYCHOLOGICAL MEASUREMENTS OF CHARACTER AND PERSONALITY

Appraisals vs. Measurements of Personality.—If the reader has been observing, he will have noticed that all the attempted evaluations of personality delineated in the previous chapter were in the nature of either direct subjective or indirect physiological *appraisals*—they were in no case specific *measurements* of personality qualities as such. The subjective approaches which we have called pseudo systems were based upon conjectural analogues or on hasty generalizations from a limited number of novel instances of the copresence of physical and intellectual or temperamental characteristics. There was no quantitative determination of the presence of personality traits of any kind. There were only judgments based on an observation of external physical attributes.

In the case of personality-appraisal systems based on physical constitution, morphologic indices, cranial measurements, chemical analyses, endocrinological functions, and the like, quantitative techniques were frequently utilized, but not for the purpose of measuring personality qualities per se. These were inferred from composite judgments based on observation (except, of course, in the case of test intelligence) and subsequently studied in relation to various physical features in the hope that they would turn out to be related thereto in a permanent way. In view of the fact that these approaches were based for the most part on the tacit assumption that personality traits are static, unified faculties of the mind, it is to be expected that they would result in failure as far as the establishment of permanent physio-temperamental connections is concerned. They, too, were based on subjective observation wherever nonphysical attributes of personality were involved.

When we come to attempts actually to measure directly what we commonly speak of as personality traits, without recourse to physical signs, we are immediately confronted with many perplexing problems, but we must and are endeavoring to proceed by way of controlled techniques and the experimental method. Strictly speaking this more scientific approach is similar in principle to that used by prescientific "investigators" and the laity alike. All have endeavored to determine the human qualities of their associates by *observing* their conduct, *questioning* them about their beliefs and dispositions, and by *interviewing others* concerning their qualifications. In our modern measuring methods, we use these same avenues but with infinitely more refinement of technique and control of all quantitative and verifiable aspects. In brief, we now seek to *observe* people under controlled conditions in the *laboratory*, as well as in *field studies*, to *question* candidates through valid, standardized attitude *questionnaires*, and to *interview others* concerning an individual's qualities by way of as accurate an approach as we can devise.

In a recent science service radio talk, Dr. Mark May[1] emphasized the point that if the science of psychology is ever to approximate attainment of its avowed goal of predicting and controlling the intricacies of human behavior, it must depend to a great extent upon the accurate measurement of the various aspects and dimensions of personality. That this is going to be a formidable task is foreshadowed by the presence in man of the seemingly unpredictable "personal equation" which so far has to a disconcerting extent eluded the calculations of even scientific workers. Apparently the laws that govern the actions of the human individual are "more intricate than those that govern the stars and planets." As one wit puts it, "The astronomer may know with precision where a certain star will be at a given time next year, but he is helpless to predict where his daughter will be at 12:00 o'clock tomorrow night."

Nevertheless, May, a leader in the personality-measurement movement, believes that science is achieving one of its greatest missions in the invention of practical methods of measuring the various complex aspects of human attitudes and behavior. In suggesting the ways in which science can secure intimate information about an individual, he lists, in addition to (1) interviewing others about him, (2) giving him psychological tests, and (3) studying him experimentally, as mentioned above, (4) a careful study of his record (the clinical case work method), (5) observation of his general conduct, including tendencies toward compensation for deficiencies and actions under a variety of contrasting conditions, and (6) personal interviews with him conducted in a manner calculated to bring out his various qualities and views.

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[1] Reproduced under the title, "Measurements of Personality," in the *Scientific Monthly*, 38: 73–76, 1934.

I. PROBLEMS INVOLVED IN THE MEASUREMENT OF PERSONALITY

The Nonquantitative Nature of Personality.—Before entering directly upon a study of the techniques of measurement and the types of instruments that have been developed to date in the personality field, it seems appropriate that we should give some consideration to the many baffling problems that confront the testmaker who hopes to make an application of the quantitative method to the evaluation of nonintellectual human attributes. As we shall see, the difficulties that present themselves in such a program are such as to discourage all but the most intrepid. In contemplating them one is led to wonder whether we will ever be able to analyze, chart an accurate clinical picture of, and measure quantitatively the intricacies of the individual human personality. Since its many varied aspects are so elaborately interlocked and enmeshed in the functioning of the organismic whole, it is a question whether we can ever make it lend itself to the production of a numerical index comparable to that worked out for the intellectual component in man (I.Q.).

In the first place, we have become so accustomed to thinking of intelligence as an accumulation of abilities, as a degree of quantitative attainment on a scale of norms from zero up through higher and higher brackets of brightness, that we are naturally inclined to approach the measurement of nonintellectual traits with much the same idea in mind. What psychologist has not given the Binet test to children and subsequently added up their scattered successes in terms of two months (or more) for each exercise? Is it any wonder that we have become accustomed to regard human traits as atomistic collections of quantitatively determinable amounts. Incidentally, it is believed by many that this mechanistic tendency toward an additive concept of the human organism is to quite an extent the result of Thorndike's now famous axiom that "whatever exists exists in some amount and can be measured." As Terman[2] comments, "These words have been taken up by his followers and turned into a veritable battlecry in their assaults upon every psychological stronghold, including even those mysterious characteristics that go to make up what is known as 'personality.'"

Even a cursory view of the organization of personality makes it clear that it cannot possibly be regarded in any such additive light. Personality is obviously a balance among many specific traits and tendencies to act, it is not an accumulation of them. To reason any other way is to ignore the essential unity and complete integration of the whole man as well as those intangible factors in personality which do not lend themselves to quantitative measurement—perhaps the X factor spoken of by Melvin (pages 7–8).

So it seems difficult to conceive of the measurement of personality qualities—not quantities—in terms of a measuring rod which starts at a known zero and works up to an end point utilizing equal units of measurement throughout. This statistically ideal procedure has not been achieved even in the realm of mental testing, so we wonder how it can be applied to the non-quantitative traits of personality. With Gilliland[3] we inquire, "What is just no sociability or no aggressiveness?" Evidently a zero point would be difficult to locate, even arbitrarily, and as for equal units of measurement in which a score of 25 meant the presence of five times as much sociability or aggressiveness as did a score of 5, such a thing is, for the present at least, quite out of the question.

We would be inclined to see more logic in Schwesinger's[4] position when she reasons that "in the field of personality a 'trait,' even empirically conceived, is not a uni-dimensional matter. When any such trait is thought of by name, as, for example, 'modesty,' 'ambition,' 'self-control,' 'suggestibility,' one has in mind apparently only *a certain degree of expression* or development of that trait." It is not so much "Whatever exists,

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[2] L. M. Terman, The Measurement of Personality, *Science*, 80: 605–608, 1934.

[3] A. R. Gilliland, Problems of Personality, *Journal of Abnormal and Social Psychology*, 23: 374, 1928.

[4] G. C. Schwesinger, *Heredity and Environment*, The Macmillan Company, 1933, p. 96. Quoted by permission of the publisher.

exists in some amount," but rather, "When the amount is excessive, or inadequate (more or less than a certain assumed amount) the trait ceases to exist and becomes something else; as, for example 'leadership' merges into 'tyranny,' 'suggestibility' into 'submission'; 'dignity' into 'snobbishness' at one end and 'clownishness' at the other; 'self-confidence' into 'bumptiousness,' 'reserve' into 'timidity'; 'tact' into 'bluntness' or sheer 'spinelessness,' depending on the direction."

This author goes on to say that while the personality traits mentioned may to some extent be thought of as existing in minimum and maximum quantity, it is a question whether anything but a golden mean is desirable as a standard to be sought after. She also brings out the significant point that the desirable degree of expression to be sought in any given trait is a function of its relation to the rest of the personality make-up of the individual. Thus ambition, which might well be stimulated in the man of high intellectual ability, had better be curbed in the case of the less dependable moron.

The Contrasted-group Approach to Personality Measurement. These considerations suggest the difficulty of ever measuring personality factors in the quantitatively absolute sense, an achievement that has not even been attempted by most builders of intelligence tests, notably Binet and Terman, both of whom sought rather to "bring to light the hierarchy of developing intelligence." It may be that the statistical tools so essential to an analysis of the data of the physical sciences will prove to be a source of oversimplification in an attempted quantitative treatment of the psychological data of personality organization. This point is well exemplified by the factor-analysis method by means of which Thurstone[5] has been able to reduce the wide variety of specific traits usually associated with the personality of a normal individual by divesting him of many of his more intangible but nevertheless essential and unique qualities leaving merely four or five mathematically distinguishable components as a sort of personality skeleton.

In the light of these errors of perspective in the personality measurement situation, Terman[6] suggests, as the most feasible approach under the circumstances, the use of the *contrasting-group* method of trait determination. This is the procedure by which responses to questions are secured from sufficiently contrasted groups of individuals to indicate their diagnostic value for the further classification of less distinctly deviate subjects. As Terman points out, this is essentially the preliminary technique used by Binet in his efforts to determine the intellectual deviations of specific children from such standards as were available. In much the same way, Woodworth secured some idea of the differentiating value of his psychopathic-tendency questions by administering them to unselected normals as well as to patients suffering from mild psychological disorders.

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[5] L. L. Thurstone, The Vectors of Mind, *Psychological Review*, 41: 1–32, 1934.

[6] L. M. Terman, *op. cit.*

In each instance, replies from fairly sharply contrasted groups (in terms of the quality being appraised) yielded data indicative of the diagnostic value of each test item. Since questions which failed to show any significant difference between the tendencies of the antithetical groups could thus be eliminated, the rest of the more differentiating questions could be thought of as constituting the preliminary basis for a test of personality trends. To quote Terman, "It is the method *par excellence* of getting together not a finished personality test, but a first approximation to such a test. By a series of approximations, each based upon tests of contrasting groups, with analysis of responses by the groups in each item, the instrument is gradually brought to the second, but by no means its final stage."

The suggested next step is that of reversing the process by utilizing the diagnostic items thus secured to pick out even more contrasting individuals for further intensive psychological study. This procedure when applied to a large variety of individuals serves to yield additional meaning to the test scores derived and serves further to prepare the instrument for reliable clinical use. When the manifold psychological characteristics and attitudes of large samplings of extreme deviates become better known, personality inventories better designed to tap the presence of such trends can be more readily devised. That this comparable method of personality-trait differentiation is proving increasingly popular with test makers will become evident as we proceed.

The Theory of Sampling in Personality Measurement.—Generally speaking a personality test purports to detect the presence in the individual of a certain so-called "personality trait" or group of traits. Thus we have tests for the measurement of introversion-extroversion, ascendence-submission, aggressiveness, honesty, sociability, and the like. The tacit assumptions underlying the use of these instruments are that unified and distinguishable traits of character and personality exist, can be charted, and are amenable to measurement in much the same way as unidimensional blocks in the physical sciences. From data presented in our chapter on the nature of personality traits, it is evident that such a conception is a naïve oversimplification of the facts.

As a number of workers, Gilliland,[7] for example, have stressed, it is extremely difficult to locate and define a trait to be tested. Gilliland says, "We may have two tests for introversion-extroversion, both relatively reliable measures of what the authors meant by these terms and both valid, but the authors may define extroversion-introversion differently." As a matter of fact, both Guthrie[8] and Pintner[9] found a very small correspondence between the scores yielded by three and two popular introversion-extroversion tests, respectively.

The reason for this state of affairs is not difficult to comprehend if we take cognizance of the nature of personality organization as it has thus far been revealed through the testimony of research. If such research had indicated the presence in man of an aggregate of consistent blocks or faculties of personality comparable to the popularly conceived, mutually exclusive "traits," the problem of measurement would indeed be a very simple matter. All we would have to do would be to influence a subject in such a way as to cause him to reveal, through one or two specific expressions of each of his traits, his whole repertoire of such traits. As Hartshorne and May[10] indicate, such a line of logic would make short and precise work of delineating the entire picture of the personality. They write, "Once the trait were identified and an instance of its operation found, a reliable measure of its exhibition would be sufficient. Having thus measured one trait by two comparable instances of its appearance, we would proceed to the next trait and do likewise. Step by step we might thus build up a picture of the whole personality."

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[7] A. R. Gilliland, *op. cit.*, p. 374.

[8] E. R. Guthrie, Measuring Introversion and Extroversion, *Journal of Abnormal and Social Psychology*, 22: 82–88, 1927.

[9] R. Pintner and C. C. Upshall, Some Results of Social Intelligence Tests, *School and Society*, 27: 367–370, 1928.

[10] H. Hartshorne and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, p. 364. Quoted by permission of the publisher.

But neither the organization of personality nor the problem of its measurement is this simple. According to the evidence which we have been presenting throughout this volume it appears that in the case of children and youth and to a less extent with adults, behavior, whether thought of in connection with character or personality, is relatively specific, being always a function of the configuration of a given stimulating situation as well as of characteristic dispositions to act that have been built up as a result of the flow of affective experiences previously encountered.

In this sense personality, instead of being a sum of unified and consistent trait entities, is, rather, an organismic fusion of literally thousands of specific but nevertheless elaborately interrelated and integrated dispositions to behave in characteristic ways under certain conditions of stimulation. To be sure, various more or less loosely organized groupings of tendencies may be subsumed under popular trait names such as thrift, loyalty, dependability, courage, generosity, studiousness, etc., but it must be remembered that the naming of these traits does not bring them into being as consistent and mutually exclusive faculties. We must beware of the tendency to invoke psychological entities by fiat through the fallacy of verbal creation.[11]

Without indulging in any further discussion of the nature of trait organization or the conditions under which behavior becomes gradually more consistent, as the advocates of general traits would have it, we can come to our point—that the measurement of any personality trait, defined in specificity terms as a system of related tendencies to act in an arbitrarily named area of behavior, involves the *sampling* of a relatively large variety of particular responses. In other words, since large consistent traits apparently do not exist, we will have to secure estimates of general personality trends through extensive sampling of a wide variety of "specifics."

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[11] D. G. Paterson, *Physique and Intellect*, D. Appleton-Century Company, Inc., 1930, p. 10.

Reasoning in this way, advocates of specificity of behavior conclude that an individual's total personality must be charted by the sampling procedure.[12] They maintain that a group of samplings assembled from measurements of various aspects of a subject's personality would provide a much more accurate basis for insight into his make-up and for prediction as to the nature of his yet uncharted tendencies than would a complete and perfect knowledge of only one of his so-called "traits." Thus we see that from this angle the measurement of character and personality involves the determination of general trends from an analysis of an extensive sampling of an individual's various behavior tendencies.

Difficulties Inherent in the Sampling Idea.—The sampling idea, which, incidently, has been so productive of results in the mental testing field, seems to be sound in principle, but from a critical point of view it, too, is fraught with difficulties. In the first place, it is based on the additive conception—that the sum total of the unintegrated samplings secured constitute an approximation of the personality of the one tested. We realize, of course, that a rich clinical picture of the organismic whole is anything but such an addition of static specifics. This limitation of the sampling notion must be recognized.

In the next place, traits, whether conceived of as particular trait actions or as clusters of related tendencies enveloped around guiding principles, are not static aspects of a total whole, they are rather fluctuating dispositions which are constantly being modified by the effects of experience and which are continually combining and recombining with each other to form new unique patterns of attitude and action. Thus samplings which are supposed to be symptomatic of the status of a given trait or total personality lose their meaning and significance when the pattern from which they are drawn has altered much of its "landscape."

In commenting on this troublesome feature, Terman[13] questions whether there is any such thing as constancy in the personality field. According to him, *cross currents* and *compensations* may alter the pattern of the personality so extensively in the course of a few years as to invalidate any attempts to prognosticate future status as we are now fairly able to do in the intellectual domain. A quotation from a recent yearbook further amplifies the complexities of this problem. "The attempt to measure one trait after another, eventually to be summed into a total character, is doomed for two reasons. One is the very simple fact that before we can get to the last traits in the series the individual will have changed in some of the aspects earlier measured. We cannot measure fast enough. . . . Moreover, if we could bid the sun and all events in time to stand still for our measuring, we would still have the impossible task of combining a series of rigid abstractions into an integrated whole, the parts of which interact, supplement, and compensate."[14]

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[12] H. Hartshorne and M. A. May, *op. cit.*, pp. 363–364.

[13] L. M. Terman, *op. cit.*, p. 607.

Another difficulty which seems to be inherent in the sampling technique is that of securing true, representative indices of a trait under examination. We must proceed on the assumption that (1) attitudes productive of trait actions exist, (2) that the responses accruing from these attitudes are accurate representations of their nature and intensity, and (3) that representative reactions can be evoked for purposes of measurement. But although it seems evident that marked attitudes which, under normal conditions, are productive of uncamouflaged responses are the common property of all of us, it is equally certain that such untrammeled reactions are often not available under controlled testing conditions. "It is one of the great weaknesses of personality tests that they cannot discriminate between attitudes that are the expression of the subjects' natural personality characteristics and those that have been acquired by compensation or self-discipline."[15] This may not be such a drawback, however, since we are usually interested in securing a testee's acquired status at the time of testing. But the real mischief enters when the subject through fear or conscious intent ends up by offering responses that are anything but emblematic of his true personality status.

The problem of estimating an individual's genuine character or personality status from simple trait actions is perhaps doubly involved in the case of behavior or *conduct tests* as used in the researches of Voelker,[16] Raubenheimer,[17] Hartshorne and May,[18] and others. Symonds[19] has listed three of the outstanding difficulties entailed: (1) Conduct does not as a rule leave behind it a tangible record that can be analyzed at the leisure of the investigator; he must devise some artificial means for securing such record. (2) In direct measurements of conduct it is very difficult so to arrange the set-up of things that the subject is unaware that he is being observed. The situation must be below the threshold of recognition. (3) In view of the specific and nontransferable nature of many responses, they must be evoked for measurement in natural field situations where laboratory controls are not so available.

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[14] Character Education, 10th *Yearbook of the Department of Superintendence of the National Education Association*, 1932, p. 404.

[15] L. M. Terman, *op. cit.*

The Reliability and Validity of Personality Tests.—One of the major hazards of personality measurement is bound up in the problem of constructing tests that are at the same time reliable and valid. If our instruments are to be trustworthy, they must be consistent in the responses which they elicit, *i.e.*, they must secure similar results on different occasions, and if they are to be considered valid they must in the nature of the case be designed to measure precisely those aspects of personality which they propose to measure. Validity, which is so essential and at the same time so difficult to attain, is usually dependent upon the availability of some outside criterion or criteria against which to check test results.

So the testmaker, no matter how capable, can hardly sit at his desk (armchair technique) and devise a list of valid test items for the measurement, say, of such a trait as "confidence" or, perchance, "fair-mindedness." He must first of all divest himself of any a priori notion that these names stand for unitary functions of the human individual, and he must, in addition, locate some reliable *objective* criterion for determining just what confidence or fair-mindedness is. This is difficult to do and, in the present state of knowledge, must in many instances be accomplished by resorting to the consensus of judgment of supposedly competent individuals.

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[16] P. F. Voelker, The Function of Ideals in Social Education, *Teacher's College Contributions to Education*, no. 112, 1921.

[17] A. S. Raubenheimer, An Experimental Study of Some Behavior Traits of the Potentially Delinquent Boy, *Psychological Monographs*, no. 159, 1925.

[18] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928; Also *Studies in Service and Self-control*, The Macmillan Company, 1929.

[19] P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1931, pp. 298–300.

But judgments are clearly subjective and, in many instances, notoriously inconsistent, especially when dispensed by single individuals. Even groups of judges can hardly be expected to agree as to the nature and normal degree of expression of a given personality trait; neither can they be expected to know the intimate characteristics of a large number of subjects with respect to such a trait. Schwesinger[20] states the case when she says, "Sometimes the judge's opinion may be poor, sometimes the individual may not reveal himself as he is, and traits which he possesses may go unrecognized, or may be clouded over by compensating factors, such as good social presence, high intelligence, and so on, which dazzle the observer to the point of befogging the presence of the trait sought." We naturally ask, if the criterion against which a test of personality is to be checked is based on such unreliable sources, what can we expect of the test? One investigator[21] has expressed the opinion that some of our tests are more valid than are the criteria against which they are checked.

We can see from this discussion that the quest of measurement workers is for more dependable standards of validity. Being distrustful of judgments they are using their ingenuity to discover or invent objective procedures for checking the relevancy of their test items to the personality aspects under process of examination. Among the various methods suggested or investigated we would mention first two already discussed in other connections. The method of sampling, which dispenses with the popular dogma of perfectly consolidated traits and which seeks for a substantial cross section of an individual's repertoire of trait actions through the administration of a battery of subtests, is becoming very popular. Then there is the method of checking against contrasting homogeneous groups so ardently advocated above by Terman and illustrated, in addition to those already mentioned, in the work of such investigators as Strong[22] and Rosanoff.[23]

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[20] G. C. Schwesinger, *op. cit.*, p. 109. Quoted by permission of the publisher.

[21] A. R. Gilliland, *op. cit.*, p. 376.

Techniques in Validating Personality Tests.—Another fairly recent approach, and one which is proving to be suggestive of better criteria in a variety of personality areas, is the method of validating test items by securing responses to them from individuals whose clinical records indicate the possession in *extreme form* of the very traits which the test endeavors to measure. This technique, which we might call the clinical-case method, is well illustrated in the construction of the Northwestern University Introversion-extroversion Test,[24] an instrument designed from its very inception to avoid the frailties of validation by analytical armchair methods.

Proceeding on the well-established thesis that there are fairly clear-cut mental-disease patterns which represent in extreme or exaggerated form the repertoire of specific subtraits represented in a milder way in normal introversion and extroversion, the Northwestern investigators, after defining their conception of these contrasting temperaments, drew up a list of test items designed to bring out corresponding types of reaction. These items were then administered to two groups of inmates of the Illinois State Hospital for the insane at Elgin who had been carefully diagnosed by psychiatrists as representative cases of dementia praecox and manic-depressive psychosis—the extreme forms of introversion and extroversion, respectively. In all, some two hundred cases were tested by trained graduate students who were not told to which group any given patient belonged.

When we consider the fact that under such circumstances the diagnostic value of any test item can be readily ascertained by computing statistically the percentages of "Yes" and "No" (in this case only "Yes" responses were used) answers secured from the two groups, we see that we have here a method of validation which checks against a tangible objective criterion. And that such an instrument, when appropriately revised in the light of all available data, can be used to differentiate among normals was demonstrated by these workers when they secured a nearly symmetrical curve in a study of 150 beginning psychology students. The fact that there was some overlapping of students with the two groups of inmates at either end of the curve provided food for thought and led to a further analytical study of the students concerned. But the investigation illustrates a validation technique which it is to be hoped may be extended to other less easily accessible (as to availability of extreme forms) aspects of human personality.

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[22] E. K. Strong, *Vocational Interest Blank*, Stanford University Press, 1927.

[23] G. H. Kent and A. J. Rosanoff, A Study of Association in Insanity, *American Journal of Insanity*, 67: 317–390, 1910.

[24] A. R. Gilliland and J. J. B. Morgan, An Objective Measure of Introversion-Extroversion, *Journal of Abnormal and Social Psychology*, 26: 296–303, 1932.

It would be a mistake, however, for us to let our enthusiasm for objective criteria blind us to the important fact that there are some areas in personality testing which in the nature of the case do not lend themselves to such treatment. This is particularly true in the case of the measurement of that aspect of the total personality pattern which we are wont to call character. There can be no common objective criterion of either the purposes of character education or of standards of good behavior, such social ideals must come from the accepted standards of an enlightened and constructively disposed public. Here the criterion commonly called "consensus of opinion of competent citizens" is the method par excellence of validation. It harmonizes with the logical principle that in a democracy such as ours the conduct of individual members must be determined by the group welfare doctrines, or *mores*, which have been developed from concerted efforts to promote the common good.

An outstanding example of this method of validation has been reported by Watson.[25] Being of the belief that there is an unnecessary gap between the objectives of character education and the type of items found in objective instruments of measurement, Watson set about to secure a broad sampling of character test items that would obviate this difficulty. Taking a few questions or problems from each of a long list of character tests, some of which are of doubtful validity, he submitted these to a group of 150 graduate students, most of whom were experienced educators and all of whom had been made familiar with recent important works on character education wherein the objectives of character were treated, for their rating on a scale of from -3, which was taken as a sign of seriously defective character, up by steps of 1 to +3, which was regarded as indicating excellent or markedly superior character.

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[25] G. B. Watson and G. Forlano, Prima Facie Validity in Character Tests, *Journal of Educational Psychology*, 26: 1–16, 1935.

In tabulating the 629 sample items in rank order based on judgments of merit, Watson figured that he had drawn off the cream, as it were, of all the other 31 tests and that he had derived a character-test nucleus around which future tests might well be constructed. The test is valid in so far as validity can be said to accrue from the judgments of supposedly highly qualified educators. At least it was validated on a better criterion than individual analyses or opinions, which is more than can be said for some of the instruments from which it was drawn.

Concluding Statement.—Our discussion thus far should serve to open up the state of uncertainty which obtains in the personality-testing field. The mental-testing movement, which was groping in much the same way some thirty to forty years ago, has successfully run the gamut of many seemingly insurmountable obstacles and now occupies a respectable place in the eyes of science. It is hoped, and some of us believe, that techniques in personality measurement will some day be as precise and accurate as are those in other better developed fields of psychological study at the present time.

In the meantime, we must struggle with such problems as are involved in the nonquantitative nature of personality, the difficulty of devising reliable units of measurement, the nonconstant organization of personality traits, the difficulty of securing adequate samples of a given individual's tendencies, and all the pitfalls attendant upon the establishment of reliability and validity in our testing instruments. However, through application of the sampling technique and the clinical-case method, considerable progress has been made, and, as we shall see in succeeding sections, many promising tests, both verbal and behavioral, have been assembled which bid fair to pioneer the way in charting the intricacies of that most baffling and least understood of all the higher organisms—the human personality.

II. TECHNIQUES IN THE MEASUREMENT OF CHARACTER AND PERSONALITY

As the title of this chapter may have suggested to the reader, measurement workers are in the habit of making a distinction between tests of personality and tests of character. We should like to clarify this distinction as it appears to us and as we have regarded it in previous discussions. Personality, it should be clear by now, is synonymous with the idea of the organismic functioning of the total individual, including all his various verbally separated aspects, such as intellect, character, drive, emotionalized attitudes, interests, sociability, and personal appearance, as well as his general social effectiveness. Character, according to this view, is a more limited concept than personality, indeed, character is one of the major aspects or interrelated components of the total personality. And to be more definite, character might well be regarded as that aspect of personality functioning which is concerned with the making of adaptations to what we are accustomed to calling the moral and ethical situations of life. Character is by no means an inner entity, it is rather a name that we give to the average moral and ethical quality of an individual's sum of specific adjustments to the requirements of his own nature and those of the social world.

It will be well to keep this differentiation in mind since many of our best measuring techniques have been worked out in delimited areas of the total whole of the human personality, such areas, for instance, as intelligence,[26] ethical character, personal attitudes, and social adjustment tendencies. Thus, it should be evident that so-called "personality tests" are practically always instruments for the measurements of *defined aspects* or components of the total whole. In this sense, character is a phase of personality—the phase which operates in making alignments with the civic and moral mores of community and larger groups. This view of the matter is in harmony with the conclusions of Watson and Forlano,[27] who, in formulating a valid "test among tests," advocated the practice of eliminating from straight character tests all extraneous items dealing with neurotic trends, school standards, personal beliefs, and the like.

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[26] While intelligence testing, like all other forms of psychological measurement, belongs properly in the comprehensive domain of personality measurement, it has become such a specialized movement and has been so thoroughly described in works devoted to the subject that we shall not include it in our discussion.

[27] G. Watson and G. Forlano, *op. cit.*

Paper-and-pencil (Verbal) vs. Conduct Tests.—There are, in the main, two types of instruments for the objective measurement of personality qualities. Leaving out of account for the moment the more subjective rating scale, these involve (1) the well-known attitude and social-adjustment *questionnaires* on which the testee merely checks pencil answers to numerous questions concerning his points of view and probable tendencies to act, and (2) controlled overt *conduct tests* in which the subject reacts to realistic life situations involving opportunities to exemplify or to fail to exemplify certain specific conduct virtues.

These contrasted types of measurements, which obviously touch on a subject's knowledge of what he ought to do vs. what he actually does do in situations involving morals, ethics, social adjustments and the like, are admirably designed to check up on the old and ever recurrent question of whether *to know* is *to do*. And as we shall see, some very interesting results have emerged from investigations devoted to a study of this important educational question.

We could wish that both verbal and conduct measurements were available for doing research work in each of the personality areas with which we are concerned here, but unfortunately such complete measuring material is available in the character domain only. A number of questionnaires have been devised for the objective evaluation of such social adjustment traits as introversion-extroversion, ascendence-submission, neurotic tendency, aggressiveness, etc., but in none of these areas has extensive work been done in checking verbal responses against overt, unguarded conduct reactions. This will explain why the correlations which we shall present as obtaining between attitude or knowledge and conduct scores are practically all taken from the character field.

The Relation between Moral Knowledge and Conduct.—For centuries, thinkers in social and moral fields have speculated as to the relation between good intentions or knowledge on the one hand and good conduct on the other. Character-education theories and systems have been constructed on the assumption that good ideals held would automatically eventuate in overt expressions of the desirable behavior contemplated by the ideals in question. This is the old idea-motor theory of the Herbartian psychophysical interactionists who thought that dominant "psychic" ideas were efficacious in leading the material body to carry out—in action—their ideational dictates. Anyone who has followed the history of this unscientific premise will recall how it ran afoul of Dewey's doctrine of learning by doing, Thorndike's bond theory, and, more recently, the principle of specificity of behavior as elaborated by Hartshorne and May.

But to present a few twentieth century researches bearing on the question—as early as 1911 Healy and Fernald[28] studied the relation between moral judgments and moral nature in general without discerning a tangible connection. A little later Haines[29] sought to learn whether the moral judgments of normal and delinquent girls were sufficiently unlike to differentiate between the two groups. It was found that they were not. Raubenheimer[30] was interested in finding to what extent a test of offense ratings would distinguish between delinquent and nondelinquents. His correlation data which range from $-.11$ to $.31$ indicate a very small but positive relationship.

Much the same results were secured by Weber,[31] in a study designed to distinguish between normal and delinquent women through their judgments of the seriousness of certain offenses. And in a study adapted to the finding of relationships between capacity for judging the probable consequences of acts and quality of actual conduct, the Chassells[32] secured a very low, but positive, coefficient (.17). Even ratings of offenses by men vs. women showed very little difference between the sexes, except for a few items notable among which was *smoking*. Perhaps a repetition of Brogan's[33] study in our day and age would show a reduction of this difference. But one of the most recent and interesting investigations of knowledge-conduct relations is that conducted by Hightower[34] in which he endeavored to find the correspondence between Biblical information and good conduct. In spite of the popular expectation in this field, this investigator found slight evidence indicative of specific character growth as a result of knowledge of the Bible.

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[28] W. Healy and G. M. Fernald, Tests for Practical Mental Classification, *Psychological Monographs*, vol. 13, no. 54, 1911.

[29] T. H. Haines, Diagnostic Value of Some Performance Tests, *Psychological Review*, 22: 299–305, 1915.

[30] A. S. Raubenheimer, An Experimental Study of Some Behavior Traits of the Potentially Delinquent Boy, *Psychological Monographs*, vol. 34, no. 159, 1923.

[31] C. O. Weber, Moral Judgment in Female Delinquents, *Journal of Applied Psychology*, 10: 89–91, 1926.

[32] C. F. Chassell, E. B. Chassell, and L. M. Chassell, A Test of Ability to Weigh Foreseen Consequences, *Teacher's College Record*, 25: 39–50, 1924.

[33] A. P. Brogan, Moral Valuations About Men and Women, *International Journal of Ethics*, 35: 105–124, 1925.

The trend of the evidence is obvious. Knowledge and intensions are one thing, character and conduct are something else. In the light of our present knowledge of the specific nature of learning, we can understand these low correlations. Knowing and doing are too unlike in function to involve very much transfer, all of which means that it is just about as futile to judge an individual's conduct potentialities by giving him a moral-knowledge questionnaire as it is to appraise a man's qualities of personality by observing or measuring his anatomical features. Judging from these data we are constrained to admit that, at least in the case of children, conduct as well as information must be learned directly by way of satisfying experience in the specific modes of behavior selected for acquisition. It will be recognized that this state of affairs has significant import for education, especially in its curricular and methodology aspects.

Knowledge-conduct Evidence from the Character Inquiry.—The most tangible, analytical, and critical piece of work yet carried out in connection with this problem is that by Hartshorne and May,[35] to whose outstanding series of studies we have found it necessary to refer so often. These investigators went to great lengths to settle this question of moral knowledge vs. quality of conduct. They did this by securing the responses of children and youth to a battery of knowledge and attitude questionnaires and later to a series of concrete conduct situations. Both of these series were elaborately worked out and were conducted periodically for a term of five years. The conduct tests included classroom testing situations, parlor games, homework, athletic endeavors, and the like, in none of which there was any awareness on the part of the children that they were being tested for conduct.

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[34] P. R. Hightower, Biblical Information in Relation to Character and Conduct, *University of Iowa Studies in Character*, vol. 3, no. 2, 1930.

[35] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928; *Studies in Service and Self-Control*, The Macmillan Company, 1929; and *Studies in the Organization of Character*, The Macmillan Company 1930.

A very general summary of their results are shown in Table 8.

TABLE 8.—CORRELATIONS BETWEEN TOTAL MORAL AND TOTAL CONDUCT SCORES

Conduct	Population	$GC + I$*	Opinion $A + B$*	All MK —$GC + I + A + B$*	All MK, I.Q.† constant	Corrected r
Honesty	X	.418	.290	.379	.294	.464
	Y	.335	.271	.332	.215	
	Z	.379	.294	.360	.194	
	XYZ	.380	.350	.380	.246	
Cooperation	X	.070	.166	.128	.088	.300
	Y	.262	.237	.284	.211	
	Z	.087	.225	.161	.120	
	XYZ	.146	.234	.204	.131	
Inhibition	X	.045	.017	.032	.014	.373
	Y	.001	.045	.028	.013	
	Z	.445	.350	.425	.252	
	XYZ	.228	.186	.221	.117	
Persistence	X	.370	.206	.308	.204	.336
	Y	.453	.341	.421	.376	
	Z	.134	.143	.148	.117	
	XYZ	.272	.184	.244	.200	

* GC = good citizenship; I = information; A = opinion A; B = opinion B, or the attitude battery.

† The cavi sigma score, which may be taken as equivalent to the $I.Q.$

From H. HARTSHORNE and M. A. MAY, *Studies in the Organization of Character*, The Macmillan Company, 1930, p. 166. Used by permission of the publisher.

Here we see a variety of coefficients of correlation between conduct tests of honesty, cooperation, inhibition, and persistence and such verbal knowledge and attitudes as are inventoried by the Good Citizenship, Information, and Opinion A and B questionnaire batteries. With a few exceptions, the relationships, though positive, are very low. This is the case even when the I.Q. factor was held constant by the partial correlation technique (column 6). And, as the last column shows, even figures that have been corrected for attenuation (a statistical device for determining what the correlation figures would be if both series of character tests were perfect instruments of measurement) are too small to support the theory that "increased knowledge guarantees improved behavior." The figures are, however, large enough to suggest some relationship between quality of conduct and knowledge thereof.

In illustrating how this meager correspondence between the two factors in question works out in actual practice Hartshorne[36] has, in another connection, given us the following examples: "If you ask fifty children who exhibited cheating in a gross way as to whether or not an individual is justified in cheating on an examination when every one else is cheating, you will find that part of them will say yes, and part of them will say no. In like manner, if you ask the same question of fifty perfectly honest children, that is, children on whom we have no evidence of cheating, they will give you the same kinds of answers in about the same proportion as the cheaters." Even when four or five hundred questions were asked, the results were always much the same.

But the question presents itself as to what bond can be held accountable for even the small positive correlations. Is the relationship a causal or a concomitant one? And is there some third factor or group of factors which holds knowledge and conduct together to the extent which we observe in the table? This point will come up again in our next section, but before leaving this discussion we should like to ask the question whether the low correspondence between knowledge and conduct is necessarily an inherent one. There is some doubt as to whether this is the case. The authors of Table 8 say, "We ourselves reported in Volume I an experiment which tended to show that, when pupils are led to think efficiently about conduct, genuine changes in conduct may be expected."[37] If children were carefully taught to apply their knowledge in a variety of concrete situations and if they were taught thoroughly to assimilate the meaning of their learnings (make adaptations), somewhat after the manner, for example, of the mastery technique suggested by Morrison,[38] it is conceivable that the correspondence between the knowledge and conduct factors might be appreciably raised.

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[36] H. Hartshorne, *Character in Human Relations*, Charles Scribner's Sons, 1932, p. 212.

[37] H. Hartshorne and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, p. 165. Quoted by permission of the publisher.

[38] H. C. Morrison, *The Practice of Teaching in the Secondary School*, University of Chicago Press, 1931.

Moral Knowledge and the Influence of Group Codes.—In seeking for a factor that would account for even a superficial relationship between knowledge and conduct, Hartshorne and May found the answer in what they call group morale. It seems that when the moral knowledge scores of *classroom groups* of even heterogeneous pupils were correlated with conduct scores for the same children much higher coefficients emerged than in the case of single individuals. In short, individual pupils of varying and diverse views and conduct dispositions tend strongly to become drawn into the ways of the group in which they move. The group code, being an aspect of the stimulating situation, influences the pupils' responses to both attitude and conduct tests.

This finding is in harmony with that pointed out some years ago by Thrasher[39] who, in connection with his sociological study of gangs, noticed stable group patterns of action that resisted change even in the face of changes in membership. And it led the Character Inquiry investigators to suspect that "the higher group relationship is not due to a fundamental and organic relation existing in the minds of the children, but is a group phenomenon and is due probably to the relationship between group code or standards and group conduct."[40] In fact, they say that a boy may have three vocabularies, one to be displayed at Sunday school, one for dinner-table purposes, and one for the alley, with practically no crossing over of the three patterns. The same with moral codes—they fluctuate in harmony with the particular group in which the boy or girl happens to be.

This tendency for correlation figures to rise to around an average of .51 (inter r's) when several classrooms as units are thrown into the correlation tables and without any evidence of improved inner character organization in the behavior system of the individuals concerned, has led Hartshorne and May[41] to doubt the value for character growth of the group influence. Symonds[42] objects to this interpretation on the grounds that the men in question are reading into their data a "wish as to what character ought to be." But we see that the integration of knowledge and conduct exhibited by groups is of a different order from the deeper ethical organization effected by individuals; indeed, that "as evidenced by correlation of group means, it can exist even when the individuals composing the group actually lack the integration of standards and conduct which is generally regarded as an earmark of character."[43]

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[39] F. M. Thrasher, *The Gang*, University of Chicago Press, 1927.

[40] H. Hartshorne, *op. cit.*, p. 213. Quoted by permission of the publisher.

[41] H. Hartshorne and M. A. May, Testing the Knowledge of Right and Wrong, *The Religious Education Association Monographs*, no. 1, 1927, p. 68.

Conclusions as to the Validity of Character Tests.—Concluding from these various disclosures, we would be inclined to say that if it were not for the expense involved and for the laboriousness of devising and administering them, the direct tests of unguarded conduct are by far the most accurate for the measurement of character and other personality qualities. However, their complicated nature well-nigh rules them out for ordinary testing purposes. Thus, we are thrown back on the practical necessity of using verbal rating scales and attitude or knowledge questionnaires.

But to make use of these indirect verbal instruments as substitutes for the bona fide conduct tests themselves is quite different from declaring, as Symonds[44] does, that in spite of the fact that "it has been demonstrated that there is so little relationship between knowledge of conduct and conduct itself . . . the two methods best adapted for estimating a person's conduct are ratings and tests of conduct knowledge and opinion." Even though Symonds bases his contention on the hypotheses that character is only an average of the qualities of one's acts and that one's verbal organization is the most tangible determiner of level of conduct integration, the alleged superiority of paper-and-pencil tests is not very convincing. Verbal organization may be the most significant single clue we have to potential conduct in general, but when we consider that the coefficient of alienation for an *r* of .50 indicates a predictive value of only 13 per cent more than chance, we see the relatively futile hope of anticipating a subject's impending conduct from responses on verbal tests, at least single tests.

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[42] P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1931, p. 293.

[43] H. Hartshorne and M. A. May, *ibid.*, p. 212. Quoted by permission of the publisher.

[44] P. M. Symonds, *op. cit.*, pp. 565–567.

Although it is quite out of the question to find a working connection between specific conduct-knowledge responses and corresponding conduct reactions, we can, nevertheless, secure fairly reliable conduct portraits of individuals by following the principle of extensive sampling and administering broad batteries of verbal questionnaires. Although these will not yield the clear-cut results securable from the direct-performance situations, they provide about the best diagnosis we can get under the circumstances. In other words, under present conditions the techniques of personality measurement are such that the verbal-battery approach, though not the most accurate, is about the most workable as far as general character is concerned. Perhaps this is what Symonds had in mind.

This, then, is the status of the character-measurement movement. Just what correspondence exists between verbal organization and overt behavior in the noncharacter realms of personality is for the present, a matter of speculation. We are inclined to suspect that, owing to the absence of the moral-protection factor, the relationship is a higher one than in the case of straight character tests.[45] That is to say, there is more chance of securing frank verbal answers that represent a true reflection of behavior attitudes in the emotional or temperamental aspects of personality. There is less motivation for giving idealistic but misrepresented verbal responses.

III. MEASURING PERSONALITY BY RATING METHODS

Of all instruments developed for the attempted direct appraisal of personality qualities, the most popular and extensively used has been the *rating scale.* As its name suggests, it is a paper-

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[45] It must be admitted, of course, that we are not sure just what constitutes a character test. Moral judgment tests, which are usually classed as measures of character, may in reality be tests of a special aspect of intelligence. This is the conclusion reached by Quadfasel (and others) as a result of examining 770 children with the Fernald moral discrimination test. This experimenter is inclined to question the assumption that the instrument under examination throws light on the subject's moral character (F. Quadfasel, Die Methode Fernald-Jacobsohns; eine Methode zur Prüfung der moralischen Kritikfähigkeit-und nicht des sittlichen Fühlens. *Archiv für Psychiatrie und Nervenkrankheiten,* vol. 74, 1925).

and-pencil device for rating one's self, or an acquaintance, on a sliding scale of personal characteristics. At the very outset, then, we must realize that, in spite of their claim to a place in the category of "objective" measurements of personality, the rating scales are really subjective in that their appraisals are based on the judgments of one or more presumably competent persons. But that this device has become extremely popular is attested to by the extent to which it is used in industry, personnel organizations, the civil service, schools, and teacher-placement agencies.

The Development of Rating Scales.—It is commonly believed that the rating scale originated with the work of the army psychologists, but, as Murphy[46] brings out, it was employed freely for the rating of interests, aptitudes, temperaments, etc., by such nineteenth century scientists as Fechner, Galton, Pearson, Cattell, and more extensively by Heymans and Wiersma and by Webb. The last-named investigator[47] made an elaborate application of the rating-scale method to the study of such involved personality traits as trustworthiness, eagerness for admiration, and originality of ideas. His report is very interesting in that he claimed to have found a "general factor" in the personality field comparable to Spearman's well-known intellectual "G."

But it is probably true that the twentieth century impetus to rating-scale refinement came as a[48] result of the pioneer work of President Walter Dill Scott (Northwestern) and his associates in connection with the selection and rating of officer material for the United States army during the period of the World War. Having been commissioned with the task of rating available men, including the regular army officers, on details of the five characteristics—physical qualities, intelligence, leadership, personal qualities, and general value to the service—qualities for some of which there were then, as now, no objective tests, Scott set out to devise a scale on which the various characteristics of each officer could be rated by an associate. The result was his five-degree, man-to-man scale on which a given individual was compared with five different men of his own rank who were believed to represent five degrees of quality in the trait being measured.

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[46] G. Murphy, *An Historical Introduction to Modern Psychology*, Harcourt, Brace & Company, 1930, pp. 381–383.

[47] E. Webb, Character and Intelligence, *British Journal of Psychology Monograph Supplement*, vol. 1: part 3, 1915.

[48] The Personnel System of the United States Army, *Adjutant General's Report*, United States Army, vol. 2, 1919. See also W. D. Scott and R. C. Clothier, *Personnel Management*, McGraw-Hill Book Company, Inc., 1923, Chap. 13.

Highest	Captain Benson	15
High	Lieutenant Gray	12
Middle	Lieutenant Spence	9
Low	Captain Clarke	6
Lowest	Lieutenant Anderson	3

Highest	Captain Clarke	15
High	Captain Benson	12
Middle	Lieutenant Jones	9
Low	Captain Ingersoll	6
Lowest	Lieutenant Wilson	3

Highest	Lieutenant Spence	15
High	Captain Ingersoll	12
Middle	Captain Mathewson	9
Low	Captain Benson	6
Lowest	Lieutenant Alexander	3

Highest	Lieutenant Wilson	15
High	Lieutenant Spence	12
Middle	Lieutenant Alexander	9
Low	Lieutenant Anderson	6
Lowest	Lieutenant Jones	3

Highest	Captain Abbott	40
High	Lieutenant Alexander	32
Middle	Captain Mathewson	24
Low	Captain Clarke	16
Lowest	Lieutenant Peters	8

FIG. 20.—War Department—instructions for rating commissioned officers (*From W. D. Scott and R. C. Clothier, Personnel Management. McGraw-Hill Book Company, Inc.*, 1923, *pp.* 205–206.)

A typical scale of this type designed for the measurement of personal qualities and with numerical values for the various rank-order degrees of the qualities in question is shown in Fig. 20.

Although these scales went a long way toward appraising by the judgment method a number of qualities that do not lend themselves readily to objective measurement, and although they performed a useful function in connection with the solution of personnel problems during the war, they have since been shown to be impractical and lacking in reliability so far as industrial and other civilian psychological problems are concerned. As Rugg[49] found, soon after the war terminated, the fact that different raters often place the same man at different levels of the scale practically invalidates it as an instrument of precision. It is like asking several men to measure the length of a room by "stepping it off."

Recent Improvements: The Graphic Rating Scale.—Since war days, considerable progress has been made in developing and refining rating schemes. There are so many significant personality qualities that do not seem amenable to direct objective measurement that the temptation has been great to indulge in the use of some device based on the collective judgment of capable people. And, after all, human judgments are in a sense ultimate criteria of the status of certain personal and social virtues. But the judgments must, in order to be reliable, be based on some common unit of measurement that will as far as possible provide unanimity among judges of diverse views.

One of the first scales, known as the Multiple-Grade Scale, was built on a plan suggested by the traditional school-mark grading system. According to this arrangement, very general personality traits, such as loyalty, neatness, cooperativeness, and the like, are presented for scoring on the basis of such gradations as *very poor*, *poor*, *average*, *good*, and *excellent*. Owing, however, to the vagueness of the traits mentioned and to the coming of knowledge touching on their inconstancy, this type of scale has turned out to be very unsatisfactory.

Much more dependable is the relatively recent Graphic Rating Scale. In place of "lump" traits, this scale utilizes descriptive phrases, or *behavior-grams,* as Griffiths[50] calls them, of sliding degrees of the trait. In addition, the better scales require the judges to indicate the extent to which they have confidence in their own ratings, a procedure which Symonds[51] has shown to be productive of increased reliability. The well-known American Council Personality Rating Scale, shown in Fig. 21 will serve to illustrate the more superior type of judgment scale.

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[49] H. O. Rugg, Is the Rating of Human Character Possible? *Journal of Educational Psychology*, 12: 425–438, 485–501, 1921, and 13: 30–42, 81–93, 1922.

We can say in favor of the graphic rating scale that, when it is constructed with due regard for certain indispensable internal mechanical features, its reliability is considerably more substantial than that of its various predecessors. The requisite features should include, in addition to others, (1) the use of descriptive phrases rather than general, abstract, so-called "trait names," (2) the use of relatively few, probably not to exceed eight, descriptive expressions, (3) the limitation of line divisions for each descriptive phrase to between about three to five, and (4) provision for space where judges may indicate their belief in the reliability of their judgments as well as instances that support their ratings in any given case. If, in addition to this type of construction, the scales are administered by raters who are well acquainted with their subjects and who are willing to pool their results into one composite "psychograph," the ratings secured should be fairly substantial, at least from a general-survey point of view.

But the most elaborate, and probably the most nearly objective and prejudice-free, personality-appraising devices of the rating type are those devised by Hartshorne and May[52] in connection with the Character Inquiry. Their Guess Who and Check List scales are illustrative. In the former, the child is given a series of short descriptions or "word pictures" of schoolmates and then asked to write down the names of the individuals whom the descriptions best fit. As an example of these we may mention number 1 in the list, "Here is a class athlete. He (or she) can play baseball, basketball, and tennis, can swim as well as any

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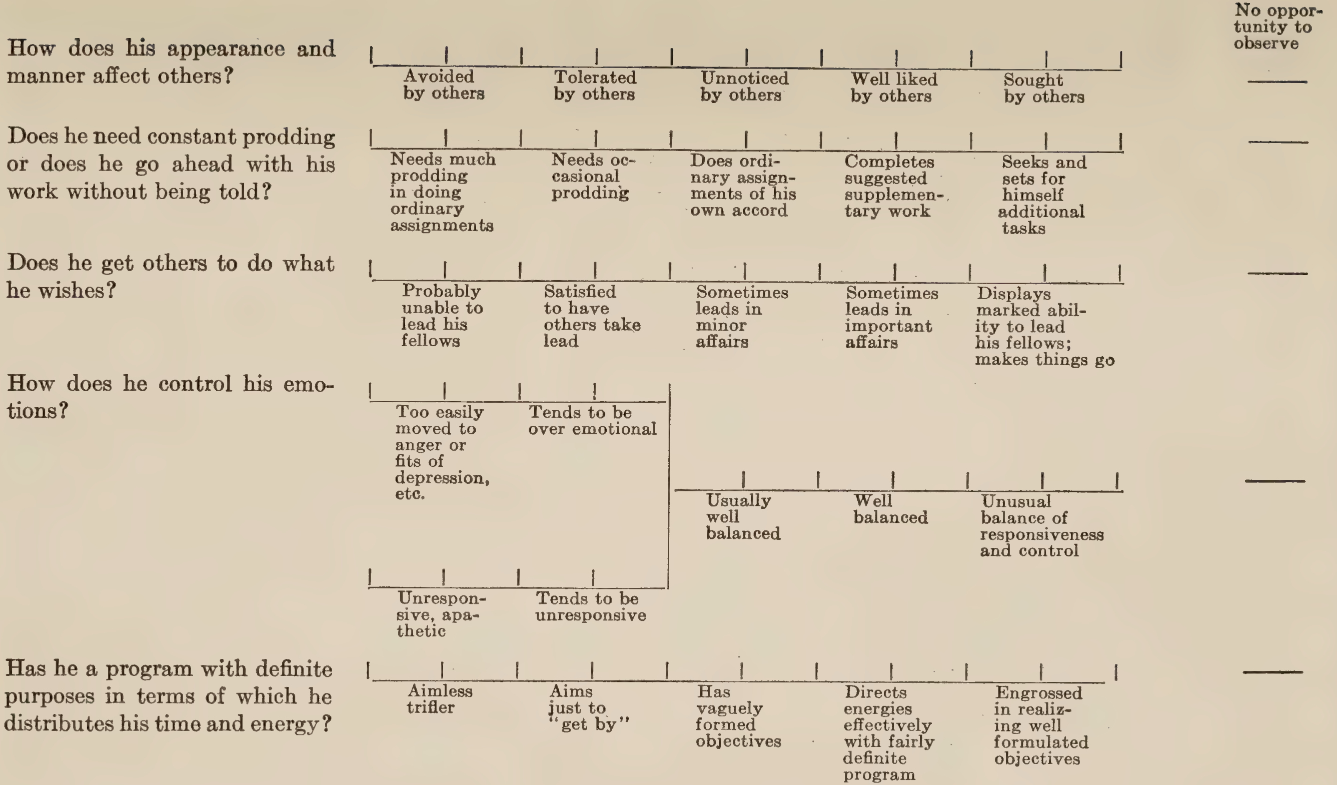
[50] J. H. Griffiths, *The Psychology of Human Behavior,* Farrar & Rinehart, Inc., 1935, p. 467.

[51] P. M. Symonds, The Present Status of Character Measurement, *Journal of Educational Psychology,* 15: 484–498, 1924.

[52] H. Hartshorne and M. A. May, *Studies in Service and Self-Control,* The Macmillan Company, 1929, pp. 87–94. Quoted by permission of the publisher.



						No opportunity to observe
How does his appearance and manner affect others?	Avoided by others	Tolerated by others	Unnoticed by others	Well liked by others	Sought by others	
Does he need constant prodding or does he go ahead with his work without being told?	Needs much prodding in doing ordinary assignments	Needs occasional prodding	Does ordinary assignments of his own accord	Completes suggested supplementary work	Seeks and sets for himself additional tasks	
Does he get others to do what he wishes?	Probably unable to lead his fellows	Satisfied to have others take lead	Sometimes leads in minor affairs	Sometimes leads in important affairs	Displays marked ability to lead his fellows; makes things go	
How does he control his emotions?	Too easily moved to anger or fits of depression, etc. Unresponsive, apathetic	Tends to be over emotional Tends to be unresponsive	Usually well balanced	Well balanced	Unusual balance of responsiveness and control	
Has he a program with definite purposes in terms of which he distributes his time and energy?	Aimless trifler	Aims just to "get by"	Has vaguely formed objectives	Directs energies effectively with fairly definite program	Engrossed in realizing well formulated objectives	

FIG. 21.—Illustrating the Graphic Rating Scale. (*From the American Council on Education, Personality Rating Scale.*)

and is a good sport" (page 88). Pupils are scored according to the number of "good" or "bad" items which they exemplify. In the Check List, the qualities of individual pupils are checked from a double list of desirable and undesirable traits.

May and Hartshorne found these scales more than ordinarily reliable. In the Guess Who scale, coefficients of from .88 (in measuring service) to .95 (for the total test) were secured, and with the Check List, the reliability figures ran from .64 for the rating of persistence to .88 for total reputation. In view of these results, these workers[53] have gone on record as favoring the use of properly constructed rating scales in investigations of character.

Difficulties Involved in Rating Scale Techniques.—At best, the use of rating scales is beset with many and what we might characterize as "grievous" difficulties most of which seriously impair their reliability and validity. As a matter of fact, the subjective nature of these scales might well lead one to question the sense of considering them in terms of reliability at all. Yet when we realize that they have been devised for the laudable purpose of appraising personality qualities for which we have no objective measures, it becomes apparent that we must attempt to evaluate and refine them as best we can. However, in the meantime, it is probably best, as Murphy[54] suggests, not to classify them as "measurements" in the usual objective sense of that item.

Coming back to the difficulties involved in rating personality, we should like to mention two as being most fundamental, *viz.*, (1) the fluctuating, nonunified nature of personality traits, and (2) the necessarily subjective character of human judgments. There are plenty of other related obstacles to accurate rating, but these stand out as being most disquieting. All through this volume we have dwelt on the seemingly unquestionable principle that traits are not static qualities, existing in given individuals in fixed amounts, and maintaining an independence of stimulating conditions of the moment; they are evidently not permanent entities and cannot thus be depended upon to yield reliable indices of an individual's possession of certain allegedly fixed personality qualities.

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[53] M. A. May and H. Hartshorne, Recent Improvements in Devices for Rating Character, *Journal of Social Psychology*, 1: 66–77, 1930.

[54] G. Murphy, *General Psychology*, Harper & Brothers, 1933, p. 580.

As for the second of the major weaknesses of ratings—the subjectivity of such appraisals—we can see that it lends itself to the production of very untrustworthy results. Judges differ greatly in their assignments of varying amounts of given traits to the same individual; too few judges results in limited perspective and consequent inadequate diagnoses; too slight an acquaintance with subjects may mean nonrepresentative judgments; the same rater may unwittingly vary in repeated appraisals of the same individual; too intimate acquaintance between raters and subjects often results in halo effects by virtue of which the rater is led to give all-round high ratings to those whom he likes and vice versa, and last, but not least, some traits are less objective and thus much more difficult to rate than others.

That there are marked differences among raters in the ability to judge the status of personal characteristics is abundantly attested to by research. Among others, Cattell,[55] Hughes,[56] Hollingworth,[57] and Slawson[58] found that independent judges differ considerably in their tendency to correlate with the averages of a group of fellow raters. And an individual whose judgments follow the central cluster of ratings on one occasion may fail even to approximate the averages of another instance.

Even the incidence of close acquaintance with subjects does not seem to guarantee added reliability of ratings. While Cleeton and Knight[59] found no appreciable correlation between judgments of close acquaintances and entirely unacquainted observers, both Landis[60] and Shen[61] have reported that the reliability of ratings is not significantly affected, within certain limits, by degree of acquaintance. This would appear to mean that while non-acquaintance is certainly a handicap to reliable ratings, degree of acquaintance beyond a certain point is no advantage in the same respect.

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[55] J. McK. Cattell, Statistics of American Psychologists, *American Journal of Psychology*, 14: 310–328, 1903.

[56] W. H. Hughes, General Principles and Results of Rating Trait Characteristics, *Journal of Educational Method*, 4: 421–431, 1925.

[57] H. L. Hollingworth, Judgments of Persuasiveness, *Psychological Review*, 18: 234–256, 1911.

[58] J. Slawson, The Reliability of Judgments of Personal Traits, *Journal of Applied Psychology*, 6: 161–171, 1922.

[59] G. U. Cleeton and F. B. Knight, Validity of Character Judgments Based on External Criteria, *Journal of Applied Psychology*, 8: 215–231, 1924.

[60] C. Landis, The Justification of Judgments: A Study of the Reasons Given by Raters in Support of Their Judgments of Emotionality, Stability and Expressiveness, *Journal of Personnel Research*, 4: 7–19, 1925.

[61] E. Shen, The Influence of Friendship upon Personal Ratings, *Journal of Applied Psychology*, 9: 66–68, 1925.

As a matter of fact, Knight[62] has noted a tendency for close friends and acquaintances to overrate each other's qualities. This systematic error seems to be based on a tendency unconsciously to extoll the "virtues" of our friends and perhaps to depreciate even the good points in the case of our enemies. This mechanism is obviously closely related to the halo-effect error of judgment that Thorndike[63] noticed in connection with the army rating procedures. The halo error may be described as the tendency for general appraisals to be carried over to specific traits of diverse quality.

Investigators have also noticed a decided tendency for individuals to rate themselves higher than others rate them, especially on the more desirable traits. Hollingworth[64] has discovered in addition a trend toward an underestimation of the presence of undesirable qualities in self-ratings. These findings are corroborated by Hurlock[65] in a study concerned with the selection by children of traits designed to describe their personal qualities. Only a very small percentage of the responses referred to undesirable traits. Incidentally, it has been noticed as well that the extolling mechanism tends to spread to close friends and admired teachers. In administering an instructor-rating scale to a number of graduate classes, Betts[66] discovered that students tend decidedly to rate practically all their instructors as being above the average for university teachers in general. In harmony with this tendency, Remmers and Place[67] found that students usually rate themselves higher than their instructors are willing to rate them.

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[62] F. B. Knight, The Effect of the "Acquaintance Factor" upon Personal Judgments, *Journal of Educational Psychology*, 14: 129–142, 1923.

[63] E. L. Thorndike, A Constant Error in Psychological Ratings, *Journal of Applied Psychology*, 4: 25–29, 1920.

[64] L. C. Cogan, M. M. Conklin, and H. L. Hollingworth, An Experimental Study of Self Analysis, Estimates of Associates and Results of Tests, *School and Society*, 2: 171–179, 1915.

[65] E. B. Hurlock, A Study of Self-ratings by Children, *Journal of Applied Psychology*, 11: 490–502, 1927.

[66] G. H. Betts, Form For Student Report on Instructor, *Second Yearbook of the National Conference of Supervisors and Directors of Instruction*, 1929, Chap. 4.

[67] H. H. Remmers and M. J. Place, Reliability of Ratings at Purdue University, *Industrial Psychology*, 1: 717, 1926.

Numerous investigations have been concerned with the problem of discovering the relative difficulty of rating certain diverse traits. We will note only two of these. In a study by Shen,[68] average coefficients of reliability ranged all the way from .34 to .38 for impulsiveness and adaptability, respectively, and to .68 and .71 for leadership and scholarship. In a similar research by Slawson,[69] typical coefficients were .335 for judicial sense, .453 for tact; .491 for effort; and .603 for all-round value to service. From these data, it seems clear that judges can agree among themselves best in the case of objective personality traits, *i.e.*, with reference to those traits in which the subject responds in such an overt way that his judges can actually see him in action. Conversely, the more intangible factors, like judicial sense and impulsiveness, are decidedly more difficult to rate.

Suggestions for the Improvement of Rating Scales.—In summarizing the testimony of the foregoing evidence, we are constrained to say that traditionally rating scales have been sadly deficient in both reliability and validity. Our preceding discussion of the difficulties attendent upon the use of these devices was in reality an analysis of the status of their trustworthiness (validity and reliability) as appraisers of human qualities. But while rating scales have been looked upon somewhat askance since the reaction that developed against them following the World War, it should be recognized that recent refinements and techniques have brought these devices up to a state of development that bids fair to result in their further acceptance for use in both school and industry. This is especially true when group ratings are substituted for the older and much less exacting single appraisals.[70]

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[68] E. Shen, The Reliability Coefficient of Personal Ratings, *Journal of Educational Psychology*, 16: 232–236, 1926.

[69] J. Slawson, *op. cit.*

[70] It should be noticed in this connection that whereas Rugg once concluded that three pooled ratings, if carefully made, would be sufficient to insure reliability of rating scale results, Symonds has more recently indicated from statistical calculations that from four to eight independent ratings (depending on the nature of the trait under examination) are necessary for diagnostic reliability (H. O. Rugg, *op. cit.;* and P. M. Symonds, *Diagnosing Personality and Conduct*, D. Appleton-Century Company, Inc., 1931, pp. 95–96).

Finally, we can conclude with Brooks[71] that the reliability and validity of these ratings can be increased by observing a few rather evident rules, such as (1) describing each quality to be appraised so meticulously that each rater understands its exact meaning, (2) limiting the number of steps on the scale to such gradations as can actually be differentiated, (3) including enough judges (from four to eight) to insure the requisite accuracy, (4) using competent and willing raters who are sufficiently acquainted with the subjects to pass reasonably accurate judgment on the personality traits possessed by them, and (5) educating judges to disregard all traits save the one under process of being rated.

IV. PERSONALITY DIAGNOSIS THROUGH QUESTIONNAIRE METHODS

In rating-scale schemes, the subject either appraised himself or was evaluated by others on a rather indefinite ascending scale or gradient of personality qualities. Becoming cognizant of the frailties of this technique, which frailties we have just reviewed, some have thought that possibly the verbal or paper-and-pencil mode of approach to personality diagnosis might be appreciably refined by developing questionnaire instruments on which the subject merely checked his personal reaction to a wide variety of hypothetical situations which could be shown to be indicative of temperamental, moral, or certain attitude trends in his conduct life. This hypothesis has appeared promising and has, as a result, eventuated in the construction of a host of such instruments a few of which we shall present in our discussion.

Characteristics of Adjustment and Attitude Questionnaires.—The reader may have noticed that we were rather careful not to call rating scales "tests" or even "measurements." Obviously they represent subjective appraisals. Now, in studying the characteristics of personality questionnaires, it would seem the part of logic to recognize that they, too, are not "tests" although they might well be thought of as "instruments of measurement." By definition, a test is a situation which presents problems to be solved, in which the individual is taxed to find a solution, and in which it is a question of what he can do. The psychological questionnaire, on the contrary, merely asks him to answer questions about himself, questions which touch on what he has done in the past, how he feels about certain matters now, and how he thinks he might act with respect to a given stimulus in the future.[72] In brief, the filling out of a questionnaire involves self-rating on such psychological matters as the presence of fears, attitudes toward social participation, tendency to daydream, the incidence of inferiority, attitude toward sex problems, and likes, dislikes, interests, beliefs, prejudices, preferences, etc., in general.

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[71] F. D. Brooks, *Psychology of Adolescence*, Houghton Mifflin Company, 1929, pp. 366–367.

It must be recognized at the outset, though, that many obstacles beset the worker who would gather precise data by the questionnaire method. In the first place when these check lists are sent out to "samplings" who presumably represent a typical cross section of some kind, only those interested are likely to comply. Thus the sampling fails to represent a clear portrait of the group one is endeavoring to question. Even when the blanks are administered to pupils in a school or to students in a university, the possibilities of error are many. Some subjects are very reticent about revealing intimate beliefs, attitudes, or peculiarities for fear of the unfavorable effect it may have on others or even on themselves, and thus they decline to cooperate. Then again, some examinees do not understand the questions, have had no experience in connection with some of them, and perhaps do not know themselves sufficiently well to respond as desired.

But psychological questionnaires are instruments of considerable value in the realm of personality study. Much important information relating to an individual's personal and private beliefs and dispositions cannot be secured in any other way. Besides, a report from the individual himself on points of this kind would in the nature of the case be preferable to the uncertainties of outside ratings by others. Of course, self-ratings suffer from subjective halo effects, but it has been shown that when subjects are not required to disclose their identity there is a great reduction of distortion in their responses. In fact, in questionnaires dealing with such temperamental trends as introversion-extroversion, ascendence-submission, neurotic tendency and self-sufficiency, as well as with attitudes toward the movies, toward racial problems, toward social questions, and the like, if the questions are clearly, simply, and inoffensively worded, considerable consistency of results may be and has been obtained. So we can say that by eliciting specific samplings of the total mosaic of any given trait or attitude the questionnaire serves a significant function in the analysis of personality.

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[72] P. M. Symonds, *op. cit.*, p. 122.

Furthermore, questionnaires yield objective and frequently numerical scores, they are as a rule simple to administer and easy to score, and often yield data that are very helpful not only in giving the subject insight into the nature of his condition, but in providing his teachers and counselors with information for the direction of guidance work. It would appear, thus, that properly constructed psychological questionnaires are in most respects superior to and come closer to the central problem of personality measurement than is the case with rating scales.

Even in matters of reliability and validity, these instruments are rapidly becoming sufficiently substantial to warrant their use in diagnostic work. While not generally regarded as being as trustworthy as intelligence tests in these respects their proponents are gradually overcoming obstacles to such development, just as the intelligence test makers did before them, and it may be that, before many years, we shall witness the inauguration of concise methods of measuring and describing man's personal qualities as they relate to his social adjustments. We may properly base this hope on progress that is being made in the validation of these questionnaires. Whereas they originally based their relevancy to the personality traits under examination on outside ratings and on the internal consistency of separate items, they now often check their results against contrasting homogeneous groups, or, even better, against extreme individuals such as inmates of state hospitals who are known to possess in ultimate form the traits which the instrument seeks to disclose.

The Psychoneurotic Inventory and Its Implications.—The earliest, and still one of the best, questionnaires for the detection of neurotic temperament is the one devised by Woodworth[73] in response to a request from army-officials during the World War for a convenient instrument by means of which men of varying degrees of emotional stability could be classified. Woodworth, after making a careful study of the symptoms of soldiers who were experiencing difficulty in making satisfactory adjustments to military conditions, and subsequent to canvassing the standard literature on abnormal psychology and psychiatry, drew up a list of neurotic symptoms which appeared suitable for the purpose in question. After preliminary checking with neurotic army groups and normal Columbia University students (the method of contrasting homogeneous groups), the list of 116 items was published as the Woodworth Personal Data Sheet, a title designed to allay the suspicions of those who would be called upon to respond to the questions.

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[73] R. S. Woodworth, *The Personal Data Sheet*, C. H. Stoelting Company, (Chicago).

A few samples of the type of questions asked will indicate the nature of this instrument

18. Do you feel tired most of the time? Yes—No
29. Have you ever lost your memory for a time? Yes—No
36. Did you ever run away from home? Yes—No
54. Have you ever seen a vision? Yes—No
60. Are you ever bothered by a feeling that things are not real? Yes—No
73. Can you sit still without fidgeting? Yes—No
86. Did you ever have the habit of stuttering? Yes—No
99. Do you feel sad or low-spirited most of the time? Yes—No

This pioneer list has proved itself useful for the purpose mentioned and has been the basis of similar questionnaires for school children by Mathews[74] and by a number of others, as well as for various other personality-measurement blanks some of which we shall have occasion to mention as we proceed. Its validity has been investigated by Flemming[75] and by Garret and Schneck,[76] who demonstrated the diagnostic value of many of the P.D. Sheet items in a study of Columbia University students vs. psychoneurotic war cases. Woodworth has reported a reliability coefficient of .90 but bases the validity of his blank largely on its ability to show differential scores for normal and psychoneurotic individuals. With school children, Matthews secured a reliability coefficient of but .667, using the split-half method.

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[74] E. Matthews, A Study of Emotional Stability in Children, *Journal of Delinquency*, 8: 1–13, 1923.

[75] E. G. Flemming, The Predictive Value of Certain Tests of Emotional Stability as Applied to College Freshmen, *Archives of Psychology*, no. 96, 1928, pp. 1–61.

[76] H. E. Garrett and M. R. Schneck, A Study of the Discriminating Value of the Woodworth Personal Data Sheet, *Journal of Genetic Psychology*, 1: 457–471, 1928.

Taking their cue from Woodworth, a number of workers have developed adjustment questionnaires of varying worth, one of the most extensive of which is the Personality Schedule by the Thurstones.[77] This list (223 questions) yields a single numerical neurotic index based on the accumulations of answers diagnostic of neurotic trend. In their work with University of Chicago freshmen, the Thurstones were successful in developing a type of question which apparently differentiates neurotics from normals. Samples of these items may be seen in the following:

Do you get stage fright?
Do you have difficulty in starting a conversation with strangers?
Do you worry too long over humiliating experiences?
Do you often feel lonesome, even when you are with other people?
Do you consider yourself a rather nervous person?
Are your feelings easily hurt?

These authors found a reliability of .95 for their entire schedule and .90 for half of it. The items appear to be valid in that they are individually consistent internally. As already mentioned, they have proved fairly effective in differentiating neurotic individuals from normal people.

The Measurement of Introvertive and Extrovertive Tendencies. Of great interest are questionnaires for the objective measurement of the contrasting temperaments first called "introversion" and "extroversion" by Jung in his well-known *Psychological Types*. A detailed account of the development of these instruments would not be out of order, but since we have already given considerable space to the implications of the introvert-extrovert concept (pages 322–325), we must content ourselves with a brief exposition of some of the outstanding attempts at valid measurement. We should like to remind the reader, however, that marked introversion and marked extroversion are but "contrasted behavior patterns having to do with social contact-making" and that when clearly articulate, they represent the extreme ends of a curve of distribution of "normals." This means, of course, that with respect to the specific traits characteristic of these contrasted extremes, most people are intermediate mixtures and thus occupy the central hump of the distribution curve. Again, then, we emphasize the point that normal people do not fall into types, but represent combinations of specialized characteristics which, when measured, distribute themselves into a continuous curve.

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[77] L. L. Thurstone and T. G. Thurstone, A Neurotic Inventory, *Journal of Social Psychology*, 1: 3–30, 1930.

In 1925, Laird[78] experimented with several personality measures. His purpose was twofold: first, to find a reliable and valid method of "spotting" persons in need of help along mental-hygiene lines and, second, to construct an instrument capable of yielding quantitative measures of the degree and kind of deviation from a central tendency. Laird worked on the assumption that the characteristics of mental ill-health are but exaggerations of normal mechanisms and thus devised a series of graphic rating scales or "spotting" instruments among which was a Scale C-1 for the detection of introvertive and extrovertive tendencies. His scale, which has been revised a number of times, was adopted in part from previous formulations, notably Woodworth's Personal Data Sheet and Freyd's[79] graphic rating scale.

Hoitsma,[80] in reporting on the reliability of the Laird spotting scale, gives a coefficient of .674 ± .039 for the C-1 scale when it was repeated by 88 subjects after a lapse of 2 weeks and of .45 ± .003 when the first half was correlated with the second half. Incidentally, he found a correlation of .35 ± .069 between this introversion-extroversion scale and academic scholarship, a situation which tends to corroborate the belief that introvertive individuals are ordinarily the better students. As for validity, Laird followed the common practice of checking each item for internal consistency.

Working at the University of Iowa laboratory, Marston[81] developed a combination explicit behavior and rating-scale method for measuring the introvertive-extrovertive responses of preschool children ranging in age from two to six years. Marston was seeking "to determine to what extent young children's reactions to their environment, particularly social, are conditioned by constant tendencies to introversion and extroversion." In substance, he found the rating-scale technique adequate for the diagnosis of introvert, extrovert, and ambivert tendencies at the tender ages indicated. Reliability figures for comparable halves of the scale averaged .89 and correlations for different raters on the same children amounted to .71. Validity as computed by correlations between scores on the scale and outside ratings ran .52 for boys and .54 for girls. No correspondence was found between introversion-extroversion scores and either chronological or mental age, but the point was well established that the temperamental trends in question can be detected and appraised even in children of preschool age.

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[78] D. A. Laird, Detecting Abnormal Behavior, *Journal of Abnormal and Social Psychology*, 20: 128–141, 1925.

[79] M. Freyd, Introverts and Extroverts, *Psychological Review*, 31: 74–87, 1924.

[80] R. K. Hoitsma, The Reliability and Relationships of the Colgate Mental Hygiene Test, *Journal of Applied Psychology*, 9: 293–303, 1925.

[81] L. R. Marston, The Emotions of Young Children, *University of Iowa Studies in Child Welfare*, 3, no. 3, 1925.

In 1926, Heidbreder[82] endeavored to measure introversion-extroversion by employing a questionnaire based on Freyd's list of 54 specific traits. In applying her blank to 900 University of Minnesota psychology students, she asked each one not only to rate himself but to secure two additional ratings by close friends. Heidbreder found that 31 of the items were diagnostic of the tendencies in question. Her study resulted in the formation of a normal curve of distribution with the median student slightly extroverted. The only reliability data reported indicate a coefficient of .55 between self ratings and associate ratings and .40 between associate ratings. Validity was again assumed from the internal consistency of the questionnaire items. In a later investigation, Heidbreder[83] found that, although there were no significant sex differences in introversion-extroversion, some of the items were decidedly more diagnostic for one sex than for the other.

Conklin[84] carried out an investigation based on the assumption that the extrovert tends toward objective, concrete situations, while the introvert inclines toward subjective, abstract materials. A ratio between these contrasting trends would, he believed, be indicative of a person's status. On the basis of 20 items known

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[82] E. Heidbreder, Measuring Introversion and Extroversion, *Journal of Abnormal and Social Psychology*, 21: 120–134, 1926.

[83] E. Heidbreder, Introversion and Extroversion in Men and Women, *Journal of Abnormal and Social Psychology*, 22: 52–61, 1927.

[84] E. S. Conklin, The Determination of Normal Extrovert and Introvert Interest Differences, *Pedagogical Seminary and Journal of Genetic Psychology*, 34: 28–37, 1927.

(statistically) to be diagnostic of introversion and 20 equally indicative of extroversion, he asked his subjects to rate themselves quickly on a nine-point pleasure-displeasure scale for each of the 40 items. Conklin concluded that his "E-I ratio" differentiated between introvertive and extrovertive individuals sufficiently well to warrant its use in vocational guidance. His instrument was validated by the internal consistency method.

Another approach to the problem was made by Guthrie.[85] After administering a battery of six tests, (1) Form C-2 of Laird's Spotting Test, (2) a campus information test, (3) Jung's association test given as a group test, (4) judgments of teachers by their students, (5) scholarship, and (6) the Wilson Mental Test, all of which were thought to have something in common with the I.E. temperament, he drew up both individual coefficients of reliability and intercorrelations among the tests. Individual reliabilities ranged from .70 to .80 but the inter-r's were too low to conclude that they individually measure introversion-extroversion. In a 12-battery study of junior and senior high school pupils, Schwegler[86] found no significant correspondence between introversion-extroversion, as determined by the Marston scale and such factors as chronological age, intelligence, and sex.

The New Validation of Introversion-Extroversion Instruments. It is to the Northwestern University group, working under the direction of Prof. Gilliland, that we are principally indebted for the development of seemingly valid I.E. questionnaires. They have followed the principle of validation by comparison with sharply contrasted homogeneous groups to its logical ultimate. Thus we have a type of adjustment questionnaire that can be said to be constructed on the basis of outside criteria that supposedly represent the extreme manifestations of the traits presented for measurement in the instrument.

In 1927, Kohlstedt,[87] a graduate student in psychology, formulated a group introversion-extroversion questionnaire that was essentially an improvement of the earlier work of two of his colleagues, Travis[88] and Bathurst.[89] Kohlstedt introduced a significant new feature in the form of *validation based on the responses of abnormal introverts and abnormal extroverts.* Working with Neymann, psychiatrist at the Cook County Psychiatric Hospital, he secured the actual verbal responses of 100 typical schizophrenics (extreme introversion) and 100 typical manicdepressives (extreme extroversion), which responses made it possible for him to compute the diagnostic value of given items for introversion or for extroversion. Following some refinements which involved the reduction of the number of questions from 100 to 50 items, half of which were pleasing to each of the contrasted temperaments, the questionnaire was published as the Neymann-Kohlstedt New Diagnostic Test of Introversion-Extroversion.[90]

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[85] E. R. GUTHRIE, Measuring Introversion and Extroversion, *Journal of Abnormal and Social Psychology*, 22: 82–89, 1927.

[86] R. A. SCHWEGLER, A Study of Introvert-Extrovert Responses to Certain Situations, *Teacher's College Contributions to Education*, no. 361, 1929.

[87] K. D. KOHLSTEDT, Master of Arts' Thesis, Northwestern University, 1927.

But the work did not stop here. Gilliland[91] and his associates proceeded further to refine the evolving instrument by reducing the items to 35 and by arranging each in five degrees of approval, ranging from extreme approval through neutrality to extreme disapproval. And to make their relative import less obvious the questions were scrambled through the questionnaire. The following samples indicate the nature of the items and the plan of presentation:

Northwestern University Introversion-extroversion Test.

Yes-No I am very much interested when other people are talked about
Yes-No I loan things to people I can trust
Yes-No I stick to my work for some time even when I am tired
Yes-No I like a great deal of praise
Yes-No I like to be in many social activities of all kinds

Yes-No I always plan my work carefully before I begin
Yes-No I would rather let someone else be the leader

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[88] R. Travis, Measurement of Fundamental Character Traits, *Journal of Abnormal and Social Psychology*, 19: 283–298, 1925.

[89] A. Bathurst, A Diagnostic Temperament Test (unpublished manuscript).

[90] C. A. Neymann and K. D. Kohlstedt, *Journal of Abnormal and Social Psychology*, 23: 482–487, 1929. Read in this connection the criticism by Stagner of the method of validation used (R. Stagner, *Psychology of Personality*, McGraw-Hill Book Company, Inc., 1937, pp. 212–214).

[91] A. R. Gilliland and J. J. B. Morgan, An Objective Measure of Introversion-Extroversion, *Journal of Abnormal and Social Psychology*, 26: 296–303, 1932.

Yes-No I consider people's feelings when I criticize them
Yes-No I do things most of the time without thinking why I do them
Yes-No I make friends with everyone

Each of the items in the list is scored (as weighted) on the basis of its demonstrated diagnostic value as determined by the ratio of "Yes" and "No" answers secured from true schizophrenic and manic-depressive patients. That the instrument as it now stands will differentiate between additional groups of such contrasted "insane" patients has been attested to by a trial with 22 schizophrenics and 16 manic-depressives. One is led to wonder, however, about a slight overlapping which occurred between the two groups. It seems that such contrasted "types" ought to be sharply differentiated by a questionnaire of this kind. And in a check on 165 university students the list yielded the usual normal distribution curve with the median at a point (700) which indicates slight extroversion.

Two administrations of this instrument with an intervening interval of 1 month yielded a reliability coefficient of .87 ± .01. The method of validation, which is the outstanding contribution of this measure, speaks for itself. We might mention, however, that a check against the customary outside ratings yielded a figure of .50 ± .05, about the usual coefficient for methods of this kind where subjective ratings and lack of agreement between the trait tested and the traits rated frequently prevail.

Social Implications of the I.E. Measurement Movement.—In concluding from the data which we have reviewed in moderate detail, we can agree with Symonds[92] when he writes, "Research to date indicates that something real is being measured by the questionnaires and that success in the use of the instruments is hampered only by the difficulty which subjects and associates have in answering the questions correctly and without bias." It does appear that significant temperamental patterns in personality are being detected and described by these measuring devices. And what is more important, there seems to be greater possibility that in this area of adjustment potentialities the data secured may be used as the basis of intelligent social and vocational guidance. If it is true, as Laird[93] says, that extrovertive individuals tend to gravitate toward such callings as foreman, executive, and nurse, and that introverts are more often found in the ranks of accountants, inspectors, research workers, and other such seclusive occupations, we may have a key to constructive counseling.

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[92] P. M. Symonds, *op. cit.*, p. 201.

[93] D. A. Laird, How Personalities are Found in Industry, *Industrial Psychology*, 1: 654–662, 1926.

And if teachers tend to be introvertive to the extent that Pechstein's[94] study indicated, we have such light on one of our great educational problems as could be made to result in far-reaching changes for the better nurture of our children.

The Objective Measurement of Ascendence-submission.—Advocates of the idea of general personality traits have been wont to suggest that some people are consistently dominant in their reactions to associates and that others are characteristically submissive. The Allports[95] became interested in exploring this aspect of human nature and have assembled a series of hypothetical verbal situations designed to disclose the extent to which individuals, both men and women, differ from each other with reference to it. A study of the various items in their self-rating questionnaires (there is one for men and one for women) indicates the way in which they propose to measure dominance and submission.

The subject is asked, for example, whether he would complain to the waiter *occasionally*, *seldom*, or *never* in situations where he was served a tough steak, an unripe piece of melon, or other such defective dish in a high-priced restaurant. Or he is asked how willing he would be to avail himself of front seats in a crowded entertainment or lecture after the program had commenced and if there were people standing in the room. Other such items are included to measure the specific tendencies of the subject to respond in characteristically dominant or submissive ways in social situations.

A scoring scheme based on the deviation of given responses from norms or criteria that have been built up for them has been worked out for this blank. Dominant responses rate plus (+) values and submissive reactions are scored as minus (−). Reliability coefficients of .74 for men and .78 for women are reported. Correlations with self-ratings show a validity of .633 and those with associates' ratings .459.

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[94] L. A. Pechstein, Introversion as a Factor in the Vocational Selection of Teachers, *Psychological Bulletin*, 25: 196–197, 1928.

[95] G. W. Allport, A Test for Ascendence-Submission, *Journal of Abnormal and Social Psychology*, 23: 118–136, 1928.

But like all traits, ascendence and submission are complex patterns of "specifics," they are by no means unitary blocks in personality. When scores from the questionnaire are thrown into a distribution table the majority of individuals turn out to be composite mixtures of specialized dominant and submissive tendencies. In other words, the usual normal curve appears to disabuse us of any notion that certain verbally created general traits exist as constants in "types" of people. This means that given tendencies toward dominant or submissive behavior may be functions of specific circumstances of the moment and may fluctuate from situation to situation, thus disproving any deep-seated existence.

However, judging from the degree of reliability of the Allport questionnaire, there must be some inner consolidation or coherence of dominant and submissive dispositions, enough perhaps to justify the authors' hope that the instrument may prove useful in counseling work whether vocational, educational, or intimately personal.

Implications of the Pressey X-O Test of Emotion.—While not as definite as most other adjustment questionnaires in what it attempts to measure the X-O Test devised by the Presseys[96] has enjoyed extensive use and has been subjected to much examination. Its unique feature is its form although it is intended to yield a very general index of "emotionality" as well as an "idiosyncrasy" score. The subject records his responses to the questions by crossing out words that are productive of certain subjective reactions such as displeasure, sense of wrongdoing, and worry—thus the X-O appellation.

The test is divided into four parts each of which seeks to secure responses that are indicative of certain "affectivity" trends, trends that must be assumed from a study of the words which the subject crosses out in each list. In the first section, which has to do with crossing out words whose meaning is unpleasant, one meets such lists as these (there are five lines of words in each section):

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[96] S. L. Pressey and L. W. Pressey, "Cross-out" Tests, with suggestions as to a Group Scale of the Emotions, *Journal of Applied Psychology*, 3: 138–150, 1919.

1. disgust fear sex suspicion aunt
2. roar divorce dislike sidewalk wiggle

After crossing out the obnoxious words the subject is asked further to encircle in each line the most unpleasant word of all. It will be seen that these words are intended to elicit feelings of *disgust, fear,* and *sex.* Words like "aunt" and "sidewalk" are, of course, jokers.

In the second section, which is evidently a free association test, the examinee crosses out words which are to him connected with the larger word at the beginning of each line. He also encircles the word in each line (5 lines) which is most closely connected with the stimulus word. The lines include:

1. BLOSSOM flame flower paralyzed red sew
2. LAMP poor headache match dogs light

Here many unusual responses are thought to be indicative of pathological or perhaps delinquent attitudes.

The third section involves lines of words in which the subject is to cross out those which he thinks are wrong and in which he is requested to encircle the word which stands for the worst wrong of all. The first two lines are:

1. begging swearing smoking flirting spitting
2. fear hate anger jealousy suspicion

The fourth part of the questionnaire, which deals with *nervous* tendencies, asks the individual concerned to cross out words which suggest anything about which he is given to worry. Again he is to encircle the one word which he worries over the most. The two lines here reproduced are illustrative:

4. falling queerness religion dizziness boss
5. sin operation conspiracy lightning marriage

The various words in the five lines of this section are intended to arouse responses diagnostic of *hypochondriacal, melancholic, paranoid, self-conscious, and neurotic* tendencies.

In the end an *affectivity* score is computed by totaling the number of words crossed out, and the *idiosyncrasy* score may be ascertained by noting the deviation of the subject's encircled words from the modal words (those most typically encircled) in each line. But it can be seen, as the authors acknowledge, that this blank does not measure anything in particular. It does gather a great deal of pertinent data touching on the emotional status of the examinee and in that sense is useful as a research instrument.

In a careful study of the reliability of the X-O Test as a whole, McGeoch and Whitely[97] secured coefficients from .82 to .87 for a 48-hour interval. Idiocyncrasy correlations ranged from .43 to .77 for the same period of time. The figures for longer periods between administrations were not so good. The validity of the instrument is an uncertain quality since it is not clear just what it purports to measure.

Questionnaires for the Measurement of Composite Trends.—Of instruments designed to inventory several rather definite forms of personality adjustment the ones devised by Bernreuter, Rogers, Bell, and Humm and Wadsworth are noteworthy. Bernreuter's[98] Personality Inventory contains 125 questions patterned after those in Laird's C-2 Introversion test, Thurstone's Neurotic Inventory, Allports' Ascendence-Submission Reaction Study, and Bernreuter's Self-Sufficiency Test; thus, this composite questionnaire yields a four-way score including indices for introversion-extroversion, neurotic tendency, ascendence-submission, and self-sufficiency. The items are scrambled throughout the blank and are answered by encircling "Yes," "No," and "?" designations. Reliability coefficients based on the responses of university students run .85 and above. The validity of the inventory is evidently based on the community of the questions with the four instruments from which they were drawn.

As we have previously indicated, there has been considerable discussion as to the scientific propriety of attempting to measure four supposedly different "traits" in one questionnaire when intercorrelations show a high degree of resemblance among them. Bernreuter's study indicates a correlation of .93 between neurotic tendency and introversion-extroversion, −.82 between neurotic tendency and ascendence-submission, and −.73 between introversion-extroversion and ascendence-submission. It may be a case of creating by verbal fiat psychological entities which are, for the most part, nonexistant, at least in the sense of being mutually exclusive. We mention this here to bring out the point that testmakers as well as others must recognize the nature of personality organization as far as present knowledge permits us to know it and must proceed accordingly in the construction of instruments of measurement if these are to throw any light on the true personality make-up of those diagnosed.[99] There is, of course, no particular difference between assuming several fairly clear-cut personality traits in one composite measuring device and in doing so by way of a variety of independent ones.

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[97] J. A. McGeoch and P. C. Whitely, The Reliability of the Pressey X-0 Test for Investigating the Emotions, *Pedagogical Seminary and Journal of Genetic Psychology*, 34: 255–270, 1927.

[98] R. G. Bernreuter, *The Personality Inventory*, Stanford University Press, 1931.

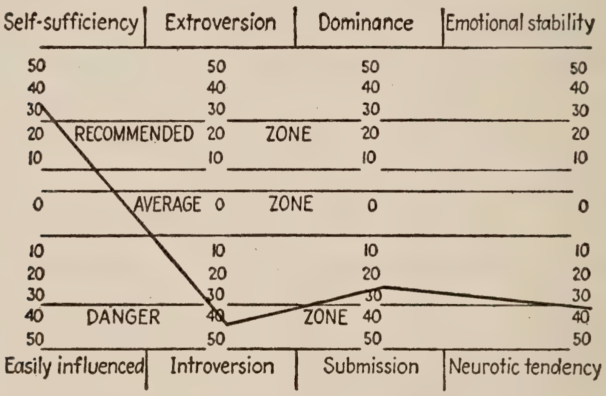

FIG. 22.—Schematic arrangement for showing personality profile based on the Bernreuter Personality Inventory.

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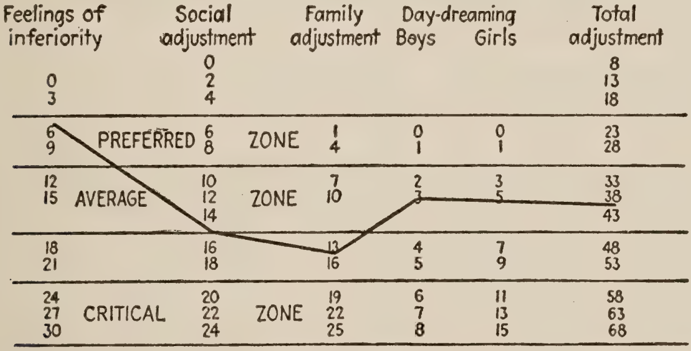
[99] In contrast with this view is the one taken by Link in connection with his Test of Four Personality Traits which is now in the making. After discussing the possibility of codifying the four desirable traits, (1) social initiative or aggressiveness, (2) self-determination, (3) economic self-determination, and (4) sex adjustment, all of which he regards as significant aspects of extroversion, Link goes on to say that in his judgment these traits might well be established by out-and-out fiat. In defense of his position, he reasons that, since all such groupings of desirable habits work together in the common function of social effectiveness, they would, in the nature of the case, correlate noticeably with each other and could not by definition be mutually independent. Link did, however, find low correlations between certain subtraits in his fiat-validated test of good personality (H. C. Link, A Test of Four Personality Traits of Adolescents, *Journal of Applied Psychology*, 20: 527–534, 1936).

Rogers[100] has constructed an adjustment questionnaire which essays to measure a child's (1) personal inferiority, (2) social maladjustment (3) family relationships, (4) daydreaming tendency, and (5) general adjustment. Although it is not claimed that this inventory is as objective and reliable (.72) as some others, it does serve to "spot" significant temperamental trends in children. In one rather baffling case study of a twelve-year old, the author verified a critical maladjustment trend through the use of this instrument that was not disclosed by several others.

Rogers originally tried out his questionnaire on a group of 50 problem children, comparing their responses with those of a group of 100 (tentative) norm-establishing "normal" children.



Feelings of inferiority		Social adjustment		Family adjustment	Day-dreaming		Total adjustment
					Boys	Girls	
0 3		0 2 4					8 13 18
6 9	PREFERRED	6 8	ZONE	1 4	0 1	0 1	23 28
12 15	AVERAGE	10 12 14	ZONE	7 10	2 3	3 5	33 38 43
18 21		16 18		13 16	4 5	7 9	48 53
24 27 30	CRITICAL	20 22 24	ZONE	19 22 25	6 7 8	11 13 15	58 63 68

FIG. 23.—Tables of norms for the Roger's Inventory arranged so as to present a child's personality profile.

This was his method of validation. The form of the inventory is based on the standard interview method of questioning a child relative to his wishes, his companions, his activities, and his family (parental) adjustments. In the more extreme cases, the scores agree fairly closely with the judgment of teachers. Reliability coefficients between psychologists' ratings and the self-ratings in question run as follows: (1) personal inferiority .39, (2) social maladjustment .43, (3) family relationships .38, (4) daydreaming .48, and (5) general adjustment .48.

The Adjustment Inventory by Bell[101] is patterned to quite an extent after the Bernreuter Personality Inventory in that it measures four aspects of personality adjustment, requires the same type of responses from examinees, and is much similar in mechanical make-up. Its function is to measure the individual's (1) home adjustment, (2) health adjustment, (3) social adjustment, and (4) emotional adjustment. The scores yielded are best interpreted in terms of *excellent, good, average, unsatisfactory,* and *very unsatisfactory* adjustment, as the case may be.

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[100] C. R. ROGERS, Measuring Personality Adjustment in Children Nine to Thirteen Years of Age, *Teachers College Contributions to Education*, no. 458, 1931.

[101] H. M. BELL, *The Adjustment Inventory*, Stanford University Press, 1934.

This inventory has been found very useful in psychological clinics and adult-counseling centers where materials of this kind can be used as a basis for the reconstruction of maladjusted individuals. Norms are available for high school and college students.

Coefficients of reliability for each of the four adjustment phases of the inventory run as follows:

(1) Home adjustment	.89	(3) Social adjustment	.89
(2) Health adjustment	.80	(4) Emotional adjustment	.85
Total Score	.93		

Validity coefficients as determined by the capacity of the various sections of the inventory to differentiate between "very well" and "very poorly" adjusted individuals found on each end of the total-distribution scale and by correlations with outside criteria in the form of other personality scales such as the Bernreuter Personality Inventory, the Allport Ascendance-Submission test, and the Thurstone Personality Schedule, are as follows:

Scale	*N*	Uncorrected	Corrected
Allport and social adjustment (men)	46	.58	.72
Allport and social adjustment (women)	50	.67	.81
Thurstone Schedule and emotional	96	.83	.93
Thurstone Schedule and total score	96	.89	.94
Bernreuter B4-D and social	39	.79	.90

Humm and Wadsworth[102] have worked out an interesting temperament scale based on Rosanoff's previously mentioned theory of personality. Through the avenue of something over three hundred carefully validated specific questions, the scale attempts to identify the extent to which "normal," hysteroid, cycloid (manic and depressed phases), schizoid (autistic and paranoid phases), and epileptoid components of personality are present in the make-up of a given individual. These temperaments, it will be remembered, are considered by Rosanoff to be normal counterparts of "uncontrolled manifestations" of the same tendencies as found in the clinical pictures of completely aberrated individuals suffering from hysteria, manic-depressive psychosis, involutional melancholia, dementia praecox, paranoiac conditions, and mental disorders associated with epilepsy, respectively.

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[102] D. G. Humm and G. W. Wadsworth, The Humm-Wadsworth Temperament Scale, *American Journal of Psychiatry*, 92: 163–200, 1935.

As the theory goes, if an individual possesses sufficient of the "normal" component, which stands for personal control, balance, or equilibrium, he is in no particular danger of temperamental imbalance, even though he may be characterized by fairly marked schizoid or cycloid tendencies, for example. In such a case, he is merely exemplifying his particular type of temperament, be it associated with conceit, suspicion, or contempt for the opinions of others on the one hand, or with emotionality, elation, and hyperactivity on the other. The Humm-Wadsworth Temperament Scale merely provides a detailed profile of the subject's temperamental pattern, be it normal or somewhat advanced toward a given psychosis.

Reliability coefficients (split-half method) for the various temperamental patterns are reported as follows: normal .82 ± .02, hysteroid .85 ± .02, cycloid manic .73 ± .03, cycloid depressed .88 ± .01, schizoid autistic .88 ± .01, schizoid paranoiac .70 ± .03, epileptoid .75 ± .02. Like the Northwestern I-E scale, the items in this scale were all validated by comparison with actual clinical cases for which the psychiatric diagnosis was considered clear. This method yielded a validity coefficient of .98 ± .01 which dropped to .81 ± .02 when "biased" scales were included.

Difficulties in the Measurement of Attitudes.—As we endeavored to indicate at the beginning of this chapter, the attempted measurement of attitudes is fraught with many difficulties of which two are outstanding. In the first place, there is the eternal problem of getting bona fide verbal responses that are actually indicative of the attitude being sought. It is a question of whether verbal reactions and attitude or conduct reactions are continuous phases of one process. The evidence indicates that they are not. Individuals may be ignorant concerning their own attitudes, they may unconsciously resist recognition of undesirable tendencies within themselves, and they may be loathe to acknowledge certain facts of personality because of fear of social consequences.

At any rate it is quite well known, as Bain[103] has stressed, that there is a decided discrepancy between "verbal" attitude and actual behavior-determining attitude, especially when socially tobooed matters are under examination. And this is just the discrepancy that complicates our attempts at measurement. Thurstone,[104] who is so well acquainted with this problem, contends that not only a man's statements, but his *overt conduct* as well, may represent distortions of his true attitudes on certain socially significant questions. He says, "Therefore we must remain content to use opinions, or other forms of action, merely as indices of attitude. It must be recognized that there is a discrepancy, some error of measurement as it were, between the opinion or overt action that we use as our index and the attitude that we infer from such an index."

This would seem to settle the matter, but Symonds,[105] as before, still insists that in spite of these considerations, "a person's verbal expression of his opinion may be taken as a fair index of his attitude," particularly if in the attitude questionnaire we can disguise what we are after. There are probably ways in which this could be done. Rosenzweig[106] has come forward with a suggestion that appears promising. He would, in the case of each questionnaire item, begin in the usual way by asking the subject *what he thinks his status is* in any given respect, but would supplement the question with the further query as to *what he would like to have his status be.* The difference between these replies could then be used as a correction for estimating what the subject's status *really is.* This process, so Rosenzweig believes, would go a long way toward atoning for the individual's "'lack of insight,' 'self-deception,' 'rationalization,' and 'repudiation'" in responding to questionnaire measures of personality.

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[103] R. Bain, Theory and Measurement of Attitudes and Opinions, *Psychological Bulletin,* 27: 357–379, 1930.

[104] L. L. Thurstone, Attitudes Can Be Measured, *American Journal of Sociology,* 33: 529–554, 1928.

[105] P. M. Symonds, *op. cit.,* pp. 236–237.

[106] S. Rosenzweig, A Suggestion for Making Verbal Personality Tests More Valid, *Psychological Review,* 41: 400–401, 1934.

The second outstanding difficulty that has to do with attitude measurement hinges on the perpetual question of whether attitudes are merely specific and unconsolidated tendencies to respond in particular ways in particular situations or whether they are distinguishable constant faculties in personality. We have frequently suggested that, in the case of adults at least, they are probably neither of these. As Likert[107] reasons, attitudes, like traits, are discernable groupings or loosely organized patterns of social response and represent a certain "*range within which responses move.*" Each group has its "family resemblance" which distinguishes it from other such groups. In harmony with Thurstone's[108] finding of a small group of attitude *constellations,* which seem to "hang together" (page 299), Likert has detected five major-attitude areas which appear sufficiently distinguishable to relate to international relations, race relations, economic conflicts, political conflict, and religion.

Questionnaires for the Measurement of Attitudes.—But social attitudes are so important that a number of workers have endeavored to *develop* rating scales and questionnaires for their detection. A pioneer attempt in this field is the instrument called Tests of Public Opinion by G. B. Watson.[109] The items in this scale are arranged in such an ingenious way that prejudice or tolerance on social questions are registered no matter how the subject responds. Bias is measured on a graduated scale of views ranging, for example, from those of economic radicals through several steps to those of economic capitalists and on up to the other extreme. In Form A the subject is requested to cross out from a list of words, such as "Bolshevist," "capitalist," "Ku Klux Klan," "Wall Street," and "Sunday blue laws," those which are predominantly disagreeable to him. In Form B he is asked to check on a five-point scale his attitude toward such controversial issues as "The churches are more sympathetic with capital than with labor." And so on, the individual being examined responds to social and ethical issues of widespread interest.

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[107] R. A. Likert, A Technique for the Measurement of Attitudes, *Archives of Psychology,* no. 140, 1932.

[108] L. L. Thurstone, The Vectors of Mind, *Psychological Review,* 41: 1–32, 1934.

[109] G. B. Watson, The Measurement of Fairmindedness, *Teacher's College Contributions to Education,* no. 176, 1925.

Watson computed reliability coefficients for all parts of his "test" and concluded that as a whole it approximates .96. Validity was evaluated in terms of internal consistency of the subtests and in relation to outside estimates of the subjects' views. Incidentally, we should mention that, although Watson's scale is no longer regarded as adequate for reliable attitude rating, it did set the pace and suggested a varying-scale method of registering opinions. As an example of its influence we could mention the work of Vetter[110] with five-point scales (reactionary, conservative, neutral, liberal, radical) for the detection of attitudes on such debated questions as birth control, government ownership, redistribution of wealth, and the like.

Among the most promising of the recent attitude scales are those by Thurstone,[111] who has experimented with the measurement of such important dispositions as attitude toward the movies, attitude toward the seriousness of crime, and attitude toward oriental races. Basing his method of scaling on the earlier work of Allport and Hartman,[112] he gathered opinions on these issues and placed them on a graduated scale from one extreme view to the other giving statistically determined values to each statement in terms of its position on the scale. Thurstone hit upon the idea as well of not only asking the subject for his one position on a scale of opinions but for the *range* of views to which he would be willing to subscribe. The mean of this span was thought to constitute a fair statement of the subject's attitude.

Thurstone's method of validation is somewhat reminiscent of mental-test techniques. It is based on adherence to three criteria, *viz.*, (1) the scale must be sufficiently comprehensive to measure adequately both sides of controversial questions; (2) the items must be unambiguous; and (3) the items must be consistent in the sense that their endorsement will mean the endorsement of other items further up the scale and an unwillingness to endorse other items located lower in the scale.

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[110] G. B. Vetter, The Measurement of Social and Political Attitudes and the Related Personality Factors, *Journal of Abnormal and Social Psychology*, 25: 149–189, 1930.

[111] L. L. Thurstone, A Scale for Measuring Attitude toward the Movies, *Journal of Educational Research*, 22: 93–94, 1930. Also, by the same author, Influence of Motion-pictures on Childrens' Attitudes, *Journal of Social Psychology*, 2: 291–305, 1931.

[112] F. H. Allport and D. A. Hartman, Measurement and Motivation of a Typical Opinion in a Certain Group. *American Political Science Review*, 19: 735–760, 1925.

The values that may accrue from the use of these scales is suggested by Thurstone's investigation of changes in children's attitudes toward the seriousness of certain crimes and toward foreign groups, such as the Chinese, that appeared after viewing films of a propaganda nature. The extent and permanency of such change is very significant for education and should command the notice of those in a position to utilize the advantages of this form of visual education.[113] Figure 24 indicates the modification that may result from the showing of a picture impressively disparaging to gambling.

Status of the Downey Will-temperament Tests.—Immediately following the world war, while psychologists were still thrilled over the success of the mental-testing program and when they were casting about for methods of measuring other areas of personality, the late June Downey[114] came out with her then intriguing "Will-Temperament Tests" designed to measure important general temperamental traits of personality by way of controlled handwriting situations. Being steeped in a background of experimental work with muscle reading and various forms of semiautomatic writing involving "resistence to opposition," "coordination," "motor inhibition," "perseverence," and the like, Downey conceived the idea of measuring a wide variety of human traits by assuming their existence from handwriting samples secured under conditions which would supposedly bring out evidence for the traits in question.

Thus *speed of movement* was "measured" by asking the subject to write "United States of America" at his usual rate of speed; *freedom from load* was inferred by comparing this speed with that involved when he wrote the same words "as rapidly as possible"; *flexibility* was noted by asking the subject to change his style of writing so that even his friends would not recognize it; *speed of decision* was determined by the rate at which an individual checked from a list of twenty-two pairs of opposites, traits which characterized him; *motor impulsion* was judged by noting results when the subject first wrote his name in the usual way, then with his eyes closed, and finally with his eyes open while at the same time counting by threes (3, 6, 9, 12, etc.) and by twos (2, 4, 6, 8, etc.).

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[113] For a summarized account of the advantages and disadvantages of the movies from an educational and social point of view one should read, H. J. Forman, *Our Movie Made Children*, The Macmillan Company, 1933.

[114] J. E. Downey, The Will-Profile, *Department of Psychology Bulletin*, no. 3, University of Wyoming, 1919. See also by the same author, *The Will-Temperament and Its Testing*, World Book Company, 1923.

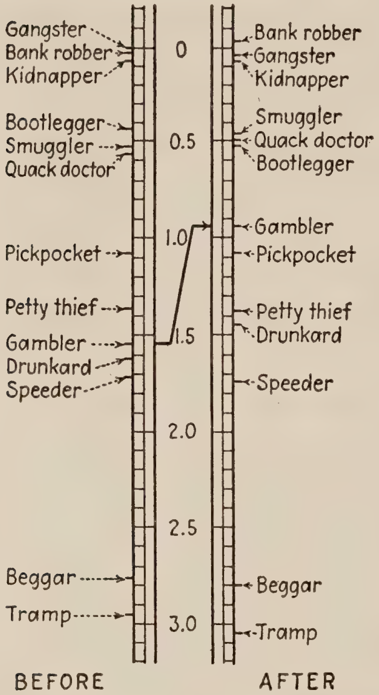

FIG. 24.—Seriousness of crimes as judged by 240 school children before and after seeing the gambling film "Street of Chance." (*From L. L. Thurstone, Journal of Social Psychology,* **2**: 298, 1931.)

And so on down the list of 12 will-temperament traits, the subject was diagnosed by the handwriting responses he made to controlled situations. A specimen Will-temperament profile resulting from this battery is illustrated in Fig. 25.

Coming out early as it did before psychologists were fully aware of the incongruities of such a scale and before they had become as critical statistically as they are now, the Downey Will-temperament Test was hailed with enthusiasm and for some time enjoyed a prestige and a following that was far out of proportion to its intrinsic merits. As time has gone on and as study after study has disproved its claims, it has declined in popularity until now it is regarded largely for its historical value. While the various tests within the scale enjoy reliability coefficients of from .30 to .80 with an average at .60, intercorrelations among them are very low,[115] and, worst of all, separate tests show very low correlations with composites of several other tests that are supposed to measure the same functions. Furthermore, correlations between the separate tests and outside ratings are all very low.

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[115] See, R. S. UHRBROCK, An Analysis of the Downey Will-temperament Tests, *Teacher's College Contributions to Education*, no. 296, 1928.

On the whole scientifically disposed psychologists are inclined to disavow the Will-temperament Tests (both single and group) as instruments of research.[116] The tests do point out individual differences in specific functions, but they have fallen far short of measuring any general traits. This is easy to understand when we consider the unlikelihood of there being any truly general traits (except in linquistic parlance) and the impossibility

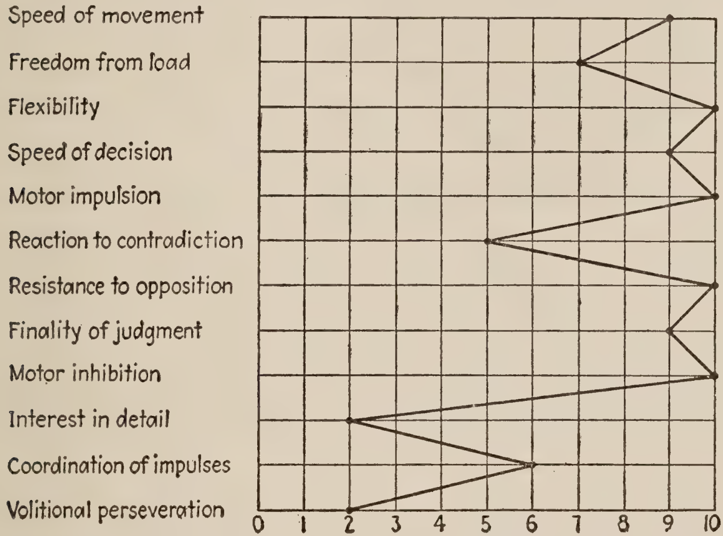

FIG. 25.—The will-temperament profile of an individual, who has held a number of important executive positions. He is, in addition, an effective speaker and possesses great dramatic talent. His profile suggests, in general, the type of the successful administrator, especially with reference to the high scores for speed of decision, finality of judgment, freedom from load, resistance to opposition and motor impulsion in conjunction with high motor inhibition. The high score for flexibility and the medium one on reaction to contradiction (tactful response) indicate social pliability and suggestibility which increase *X*'s social assets, but are of dubious value in his business life. The low score on interest in detail is not a serious defect, since *X* is in a position to turn over to subordinates the execution of many of his projects. It goes, however, with a tendency to generalize on insufficient grounds. The low score on volitional perseveration is probably a real weakness." (*From J. E. Downey, Manual of Directions, World Book Company,* 1921.)

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[116] As examples, see M. A. MAY, The Present Status of the Will-temperament Test, *Journal of Applied Psychology,* 9: 29–52, 1925; and A. A. ROBACK, *The Psychology of Character,* Harcourt, Brace & Company, 1927, p. 366.

of knowing the potential nature of conduct in general from a few laboratory samples that do not even approximate life situations. Writing rapidly or slowly or without restraint under classroom or laboratory conditions are specific reactions which bear very slight resemblance to most practical workaday responses concerned with speed or poise and therefore cannot be used as measures of prediction of such behavior in general. The whole will-temperament testing idea was based on the fallacious hypothesis of the existence of unified traits whose presence could be detected from one or two alleged samples of their nature and organization.

V. THE DIRECT MEASUREMENT OF OVERT BEHAVIOR RESPONSES

Much has been said in preceding pages about the fallacy of concluding anything definite about the existence of conduct traits from questionnaire data calling for knowledge or attitudes concerning conduct situations. In view of this apparently insurmountable discrepancy between verbal response and overt conduct it would seem the way of logic to attempt to measure by direct methods the actual conduct itself. Some very promising beginnings have been made with this mode of attack, particularly in the field of character measurement. To these we shall now turn. Perhaps we are warranted in assuming that similar techniques may eventually be worked out for the more prominent of the noncharacter components of personality.

Problems Involved in the Measurement of Conduct Itself.—But the direct approach entails a variety of problems of technique, both theoretical and practical. In the first place, we might ask, how is the individual's total character to be measured in concrete, lifelike situations? Secondly, how can permanent records of spontaneous behavior in natural field situations be secured? Third, what can we do to keep concrete testing situations below the threshold of the subject's recognition? And, finally, how can we avoid the artificiality and irrelevency of laboratory situations? Endeavoring to answer these questions, we can do no better than offer a short résumé of the outstanding work along this line so ably carried out by May and Hartshorne in the Character Education Inquiry. Other investigators have made contributions to the solution of these problems, but, since the results emerging from the above inquiry are comprehensive in scope and clear-cut in detail, we shall illustrate the techniques involved by reference to them.

In answer to the first question, we may remind the reader again that these advocates of specificity of behavior merely dispensed with the notion that traits are constant unified entities of personality and proceeded to measure the entire functioning individual at whatever stage of conduct integration he might have arrived by the process of extensive behavior sampling. Thus, by securing batteries of actual conduct samplings from the various areas of character organization and by viewing these as a whole, the general character pattern is well represented.[117] And it is hardly fair to accuse these workers of assuming that character is a motley accumulation of atomistic "specifics." As we see it they understand the organismic nature of behavior and are only trying to secure an insight into character in any given case by inspecting the tangible fruits of its operations.

As for the other questions just voiced, an idea of the care that was exercised in an effort to solve the problems involved may be gathered from a statement of the criteria chosen for the conduct of direct testing:[118]

1. The test situation should be a natural one as well as adequately controlled.
2. The test situation should be of such a nature as to allow all subjects equal opportunity to exhibit the behavior which was being tested.
3. No test should subject a child to an unnatural moral strain.
4. The test should not put the subject and the examiner in a deceptive relation to one another.
5. The test should have "low visibility," *i.e.*, it should be of such a nature as not to arouse suspicion.
6. The activity demanded by the test should have real value for the subject whether he was aware of it or not.
7. The test should be of such a nature as not to be spoiled by publicity.
8. For a statistical study, the tests should be group tests. They should be easy to administer and mechanically scored.
9. The test results should be clear and unambiguous, and there should be no uncertainty as to the presence of the trait being measured.
10. Test scores should be quantitative, showing the amount, as well as the fact, of deception.

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[117] H. Hartshorne and M. A. May, *Studies in the Organization of Character*, The Macmillan Company, 1930, p. 363.

[118] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928, pp. 47–48.

Behavior Tests for the Measurement of Honesty.—Although Hartshorne and May have carried the conduct-sampling idea to its natural fruition as a research tool, it must not be supposed that the technique originated with them. As early as 1921, Voelker,[119] in a boy scout training experiment, developed an original battery of behavior situations designed to test the conduct functioning of scout ideals. He would test a boy's willingness to accept a tip, for example, by arranging to have someone offer him one and note the reaction. Likewise, he would check up on a boy's tendency to return lost articles by arranging to have him find an item of value without knowing that he was being observed.

Others, notably Cady[120] and Raubenheimer,[121] have amplified these methods in various ways, but Hartshorne and May have made the most use of them. In their extensive survey of honesty behavior, they sampled a variety of unguarded life situations involving particularly opportunities for cheating, stealing, and lying. With respect to *cheating*, the children studied were placed in controlled situations where they might cheat on examination papers without realizing that they were being detected, where they could cheat on a circle checking study by peeking (indicated by successes that are statistically very remote), where they could cheat by making overstatements as to what they knew or could do (checked by giving the children actual tests), where they could cheat in athletic contests by misrepresenting their achievements, and where they had an opportunity to cheat in playing parlor games.

The *stealing* type of deception was measured by "planting" a dime in a puzzle box and noting which children actually took pains to return it with the box, by the coin-counting test in which children were requested to return a box of coins after having counted them and recorded the results on a mimeographed sheet, and by party games in which dimes were placed in children's hands without their knowing that they were being watched to see if they would return the same.

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[119] P. F. Voelker, The Function of Ideals in Social Education, *Teacher's College Contributions to Education*, no. 112, 1921.

[120] V. M. Cady, The Estimate of Juvenile Incorrigibility, *Journal of Delinquency Monographs*, no. 2, 1923.

[121] A. S. Raubenheimer, An Experimental Study of Some Behavior Tests of the Potentially Delinquent Boy, *Psychological Monographs*, vol. 34, no. 159, 1925.

Lying was detected by paper-and-pencil tests designed to measure (1) lying to avoid disapproval and (2) lying to win approval. With respect to the first type, children were asked if they had ever cheated on previous tests. An index of lying was available by comparing the answers given with the known results on previous cheating tests. Lying to win approval was accomplished by asking a series of questions concerning "specific acts of conduct which on the whole have rather widespread social approval, but which at the same time are rarely done." Such questions included:[122]

2. Did you ever act greedily by taking more than your share of anything? Yes-No
3. Did you ever blame anyone else for something you had done when you knew all the time it was you? Yes-No
8. Have you ever disobeyed any law of your country or any rule of your school? Yes-No

These questions are such that "The child who could answer thirty-six truthfully would be a pious fraud." The validity of the questions was established by giving them to a graduate class in educational psychology, the members of which were interested in the moral aspects of education.

From this brief presentation, it should be evident that the Character Inquiry has practiced its doctrine of the specificity of response in a very comprehensive way and that such an extensive sampling of honesty behavior provides as representative an index to an individual's deceit tendencies as can be marshalled. Of course, the whole procedure is sufficiently laborious and expensive to confine it to subsidized experimental work, but it illustrates the direct and valid technique for diagnosing character and personality traits. Those who are interested in learning the detailed coefficients of reliability and validity for these tests should read the original reports by Hartshorne and May.

Measures of Service, Cooperation, and Other Character Traits. A variety of character attributes other than honesty-deceit were studied by the Character Inquiry workers from the conduct control angle.[123] *Service* in the form of helpfulness, cooperation, self-denial, charity, etc., was measured by such devices as the Self-or-

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[122] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928, p. 98. Quoted by permission of the publisher.

[123] H. Hartshorne and M. A. May, *Studies in Service and Self-Control*, The Macmillan Company, 1929.

Class Test, the Money Voting Test, and the Envelopes Test. In the Self-or-Class Test spelling prizes were to be given to both class and individual winners. Each child had to decide whether he would compete for personal honor or for the good of the group. In the Money Voting Test, the youngsters were required to decide whether to vote prize money to the individual who stood highest in the spelling contest, to the school for decorations or athletic equipment, or to some orphanage or sick child. In the Envelopes Test each child was given four envelopes with the request that he take them home and fill them with jokes, interesting pictures, and stories for distribution to hospital children.

The trait called "inhibition" was measured first by a Story Inhibition Test in which an exciting story was read by the teacher up to the climax, at which point each child was given his choice of writing on the back of the story sheet (which he was holding) how he thought the story was coming out or, if he must, break open a previously pasted folder to see the actual ending of the story. A Safe Manipulation Test was also used in which each child was given a toy safe with instructions not to touch it until a little later when he would be given an opportunity to try to open it. In the meantime, a series of paper-and-pencil tests was given to kill time and thus test the child's power of resistance to temptation. Dial changes on the safes were noted by the teachers. A third device, the Puzzle Manipulation Test, consisted of a box in which five small puzzles were arranged on a puzzle-peg board in such a way that any rearrangement thereof could be recognized at a later inspection. As in the preceeding test the children were given these boxes with directions not to disturb them while some paper-and-pencil tests were being taken.

Persistence was measured for the most part by checking the length of time a child would stay by the task of solving puzzles. Among the puzzles used was the Magic Square which required him to arrange numbers in blocks in such a way as to come out with a certain sum, and the Japanese Cross consisting of some wooden sticks which were to be fitted into the form of a cross. These as well as the other Character Education Inquiry tests enjoy fairly high reliability coefficients. They were found to be very effective in eliciting substantial cross-section samplings of the detailed responses which go to make up a reliable representation of the conduct status of the "traits" under examination.

Concluding Statement on the Measurement of Conduct.—This brief discussion should serve to depict the involvements of the direct approach to conduct measurement. But the conclusion seems inevitable that the very characteristic (specificity of behavior) which calls for this technique makes such testing impractical unless sufficient samplings are secured to provide statistically reliable representations of the kind of behavior being measured. In view of the unlikelihood that general traits exist in any functional sense and in the light of the apparent fact that knowledge of an individual's general character status tells us little as to how he is likely to respond in a given situation, we can see that the problem of character measurement is a complicated one.

Yet the direct conduct-testing approach as exemplified in the extensive researches of May and Hartshorne is obviously the most logical mode of attack. It may not often be feasible from the standpoint of available skill, equipment, and financial resource, but it is the one method which samples specific conduct in a sufficiently wide variety of concrete situations to provide a reasonably satisfactory composite portrait of the status of a given trait (area of behavior). It is obviously the preferred method for measuring relatively unconsolidated children and youth. For more thoroughly integrated adults, it may be that less exacting and elaborate samplings are needed for practical appraisals of character status.

The direct approach brings the analysis of character and personality out "into the open of the psychological arena." It studies specific modes of conduct in the light of the psychological circumstances of the stimuli which elicit them and with reference to the facts of original and derived nature which condition their expression. It takes cognizance of moral considerations, but considers the reactions of children in terms of their natural tendency to circumvent cramping moral endorsements when directly blocked in their search for organic and psychological satisfactions. Because of its instrumental approach to the problem, it has been accused of being superficially mechanistic and of neglecting the "psychological warp and woof" of specific trait actions— "their *genetic motives*."[124] But through it all, we can see that the conduct-sampling manner of measuring the character component of personality is striking at the heart of the problem, and that, although it may not satisfy conventional philosophies of character organization it has opened up to us an understanding of the antecedents of conduct that bids fair to chart the way to a much more intelligent program of character education than we have hitherto attained.[125]

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[124] A. A. Roback, *The Psychology of Character*, Harcourt, Brace & Company, 1927, pp. 362–364.

VI. SUMMARY AND IMPLICATIONS

Having canvassed the limitations and possibilities of psychological scales, questionnaires and conduct tests designed to diagnose the various aspects of the total personality, we come in conclusion to the questions of their scientific status and their promise for the future. In reviewing the literature as produced by those who have been progressively active in this field, one gains the dual impression that these instruments, as we have described them, are now in a state of infancy or adolescence so to speak, but that they appear sufficiently promising to warrant the prophecy that in a few years they will, barring cessation of present research, bear favorable comparison with standardized tests in other fields, notably that of abstract intelligence.

Personality measurements lack the reliability and validity of their predecessors the mental tests, but methods of overcoming these obstacles are rapidly being devised. As a matter of fact, as some of the studies referred to show, when a battery of verbal instruments and behavior tests is administered with due precautions and experimental controls, surprisingly clear-cut differentiations of personality tendency are frequently pointed out. And while theoretically it would take a forbiddingly large array of scales, questionnaires, and overt tests to arrive at reliable conclusions as to the intimate organization of a given personality, approximate results may be and have been attained by the use of a small number of even verbal rating scales and knowledge or attitude questionnaires.

Granting that objective techniques of personality measurement have not progressed far, the fact still remains that much has been done through this channel toward the detection of temperamental differences, individual attitudes concerning moral problems and social-economic issues, specialized tendencies toward such dispositions as honesty, service, inhibition, persistence, aggressiveness, and the like, and, not the least important, tendencies toward abnormal emotional behavior. An application of objective measurement promises as well to assist us in obtaining evidence touching on the adjustments that individuals are making to a wide variety of environmental factors, to intimately personal problems, to sex relationships, to moral and religious considerations, and to many of those intricate and baffling matters of feeling that loom so large in the determination of personal freedom from stress.

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[125] H. Hartshorne and M. A. May, *Studies in Deceit*, The Macmillan Company, 1928, pp. 412–414.

Perhaps future refinements will make possible the disclosure of these fundamental characteristics and interrelations of personality which are now so little understood or appreciated, but which when ferreted out will provide a scientifically sound basis of personality and a program upon which to proceed in our quest for a deeper understanding of the dynamics of human nature.

QUESTIONS FOR STIMULATING THOUGHT AND DISCUSSION

1. In attempting to measure personality directly or by the use of questionnaires, how are we to overcome the difficulties involved in the fact that personality represents a *balance among* traits rather than a *summation* of the same? In short, can personality evaluation be handled quantitatively? How?
2. To what extent do you think the sampling technique in measurement will ensure reliable and valid personality evaluations? Wherein is the sampling method weak and what suggestions would you offer for overcoming the drawbacks advanced?
3. What are the implications for personality development of the finding by Hartshorne and May of such a wide discrepancy between a child's moral knowledge on the one hand and his type of overt conduct on the other? In view of this situation, to what extent can we place confidence in verbal methods in general?
4. Since group codes are apparently so efficacious in determining quality of behavior, should we not seek for character and personality improvement in group situations? What do you think of Hartshorne and May's contention that group training tends to be superficial, *i.e.*, that group ethics may exist even when the individuals concerned lack personal integration of standards and conduct?
5. How do you explain the fact that in spite of their rather obvious weaknesses personality-rating scales are still very much in use and apparently even increasing in popularity? Does this mean that their exponents have been able to eliminate the factor of subjective judgment in making personality appraisals? What does it mean?
6. Is it reasonable to believe that industrial concerns, for example, could, by observing the best criteria for ensuring reliability and validity of

personality rating scales, use them to better advantage in personnel administration than would be the case with objective personality questionnaires? Give the reasons for your answer.

7. Is it likely that the recent method of validating temperament scales and introversion-extroversion measures by comparison with the responses of out-and-out abnormal individuals representing the various clinical pictures will result in the elimination of all objections and inadequacies in this field of endeavor? What difficulties or obstacles still remain?
8. How can we claim that composite instruments like the Bernreuter Personality Inventory measure distinct personality traits when correlation figures show great overlapping among some of the traits and in the face of the fact that group test scores nearly always take the shape of a normal curve of distribution? In short, do not most people represent composite or mixed personality pictures? Explain this.
9. Academic psychologists are often prone to condemn personality inventories on the ground that they are not sufficiently reliable and valid to ensure critically accurate results. What would you say to the consulting psychologist's reply that an approximately accurate picture of personality trends is sufficient for planning appropriate remedial measures? Does this, from a practical angle, save the day for our present personality questionnaires?
10. What objections, other than administrative economy and expediency, can you offer to the Hartshorne and May technique of direct measurement of overt conduct in unsuspected life situations? Point out items touching on child character and conduct that can be secured in no other way.
11. Does our experience with personality scales, questionnaires, and conduct tests bear out the hypothesis that behavior is originally highly specific but that in its genetic development it becomes, owing to social pressures and growing ideals, progressively more consolidated up to a limited point? Or does such experience indicate the existence of unified static personality traits? Buttress your position with defensible evidence.
12. State your conception of future possibilities for the scientific use of personality and attitude scales along the line of legal practice, social work, criminology, medical practice, psychiatry, clinical psychology, education, theology, industrial personnel administration, and similar major endeavors. What will the principal obstacles be?

Recommended Readings

Allport, G. W.: *Personality, A Psychological Interpretation,* New York: Henry Holt & Company, 1937, Chaps. 14–17.

Bain, R.: Theory and Measurement of Attitudes and Opinions, *Psychological Bulletin,* 27: 357–379, 1930.

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